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EDITED BY
GREGORY STRAGNELL, M. D.

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LIST OF CONTRIBUTORS TO VOLUME CXXIV.

Those whose names are marked with an asterisk have contributed editorial articles.

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ABT, I. A., M.D., Chicago.
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*BANCROFT, FREDERIC W., M.D., F.A.C.S., New York, N. Y.
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BRADLEY, WILLIAM N., M.D., Philadelphia.
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BROWNNE, JOHN S., New York.
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CULVER, GEORGE D., M.D., San Francisco, Calif.
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JOHN, HENRY J., M.D., Cleveland, O.
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*KANTOR, JOHN L., M.D., New York.
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*KERBY, ERNEST, M.D., New York.
KLEINBERG, SAMUEL, M.D., F.A.C.S., New York.
*KNOPF, S. ADOLPHUS, M.D., New York.
*KOVACS, RICHARD, M.D., New York.
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LAMBERT, ALEXANDER, M.D., New York.
LANDSMAN, ARTHUR A., M.D., New York.
LEADINGHAM, R. S., M.D., Emory University, Ga.
LE FLEMING, ERNEST KAYE, M.B., M.R.C.S., Dorset, England.
LEWIS, DWIGHT M., M.D., New Haven, Conn.
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*Rogers, James F., M.D., Washington, D. C.
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*Sajous, Louis T. de M., M.D., Philadelphia, Pa.
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Weiss, Samuel, M.D., F.A.C.P., New York.
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*Wolbarst, Abr. L., M.D., New York.
Wright, Barton Lisle, M.D., Balboa, Canal Zone.
Wright, Harold Walgrove, M.D., Foxboro, Mass.
*Wright, Jonathan, M.D., Pleasantville, N. Y.
Wyman, Edwin T., M.D., Boston.

Yeomans, Frank C., M.D., F.A.C.S., New York.

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The "John Bull" Spirit in Medicine*

H. CRICHTON-MILLER, M.A., M.D. (Edin. and Pavia)

London

The department of medicine in which I work is one in which racial characteristics assume considerable importance. The different qualities which a patient owes to his heredity go a long way to determine the prospects of cure by psychotherapy. It is true that a man can be a good patient or a bad patient and that this quality will show up more or less whether he be suffering from eczema or sarcoma. It is also true that a man's capacity to adjust to illness depends on many factors beside his heredity—his upbringing, for instance, his past experience, his age and so on. And this is true in psychotherapy as well as other branches of therapeutics. But in my department racial and hereditary factors are of special interest. In psychological work a prognosis must necessarily be influenced by them to no inconsiderable extent. For instance, hysteria tends to be much more curable in women of northern blood than in those of Latin origin. Obsessional and compulsion cases tend to be less tractable when the patient is of Celtic descent. Furthermore, some cases reveal important conflicts in respect of race consciousness. Some have a profound inferiority sense based on the knowledge that they are partly descended from races held to be inferior. Others have a mixed origin that brings with it temperamental incompatibilities. One of the most baffling cases I ever treated was a young man who was half French and half Semitic. Despite great intellectual ability and many social advantages his ill matched endowments produced unceasing conflict in his mind.

Dealing as I do, then, with personal problems that involve the race factor I have frequently pondered on our professional characteristics as conditioned by our national heritage, and it struck me that a study of this kind might be sufficiently interesting to justify my selection of it for this address. I was fortified in my choice by the reflection that I have studied at and graduated from a foreign university as well as from Edinburgh and have thus had opportunities that every one has not enjoyed of comparing men and methods of different races.

The characteristics of the British are traditionally labelled by the name of John Bull. The cartoonist all over the world represents the British public or the British government by the symbol of an early Victorian gentleman of considerable weight, obvious determination and menacing solemnity. From an anthropological point of view he is correct enough, a pure Anglo-Saxon. There is no trace of the Celt in his brachycephalic cranium, his nose gives no evidence of a semitic contribution, his skeleton is too large and clumsy to suggest any Latin infusion, and he is too short to pass as Scandinavian. If then we accept him physically as representing a racial type—perhaps a racial ideal—what about the psychological side of the picture? Well, in the first place John Bull's dress is unquestionably symbolic of traditionalism. As a race we certainly tend to be traditionalists. Precedent means more to us than to any other civilized race, excepting perhaps the Japanese. If you doubt this, I suggest that you seek the opinion of an unbiased foreigner on the Book of Common Prayer or the Imperial scale of weights and measures.

TRADITION

But tradition is not a bad thing in itself; it represents—or ought to represent—the accumulated experience of past generations. It becomes a bad thing, however, when men cease to apply to it respectful criticism and when they regard it either as an adequate justification for continuing on a prescribed course or as a final reason for destroying an institution. Whether the British are as completely fettered by tradition as some of our critics maintain, I do not propose to enquire. But it does interest us to ask how far tradition dominates our profession and whether we are more or less sensitive to change than the rest of our compatriots, and still more it interests us to compare ourselves with our colleagues of other lands.

In answer to the first question, I would venture to submit that the British doctor is by no means more bound by tradition than many another Britisher. It is true that in engineering and architecture, in journalism and education, advances are being made in the Empire at a very gratifying rate. But if we have not shown comparable advances we can at any rate comfort ourselves that we are less fettered by the past than the farmer, the lawyer and the parson.

It is the boast of many an elderly doctor that he is prescribing the identical mixture for psoriasis that he was taught as a student thirty years ago. This is

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deplorable, not only because the fact should be an occasion for modest reticence, but also because it indicates that he has been content to prescribe for all these years a remedy which did no appreciable good. The doctor who is less content with the experience of his teachers may have no greater success in the treatment of this particular affliction, but he will at least have tried out a number of equally ineffective novelties. You will say that the result, as far as the patients are concerned, is the same. True, but there is a difference. The first man complacently moving along the groove of the past could never discover a better method; the second, with all his fruitless experiments might have stumbled on a real improvement. Then do I suggest that a doctor should try every new nostrum and believe every advertisement that he receives? Far from it—but I do affirm that a reasonably critical attitude towards tradition would prevent any man from continuing to prescribe an ineffective remedy and would drive him to an empiricism that could not be less valuable and might result in positive gain. On the other hand experimentalism in new remedies is unquestionably a growing evil, abroad if not at home. Commercial exploiters of new preparations are tempted to condemn older remedies unfairly. Their propaganda tends to make the physician lose his respect for a traditional form of treatment and to adopt the new simply because it is new, and not because he has found it to be better. Taken all round I submit that the English doctor cannot be acquitted of a certain sterilizing satisfaction with oldfashioned methods. On the other hand he does hold on to a good thing when he gets it and that is more than can be said of the average doctor in some other lands.

DETERMINATION

But to return to John Bull's psychological characteristics. I have said that he gives the impression of obvious determination. Here I think we may claim a fairly high place. Determination, in so far as it may be assessed as a racial characteristic, belongs to the men of the mountains and to the seafaring races preeminently; in so far as it belongs to any particular profession, it is naturally to be found in those professions which cannot be entered without it. In any land doctors must be among the most determined spirits, for in general there is no more exacting nor arduous training than that which our profession demands. And it is well it should be so, else what sort of a fight would we put up against asthma and otosclerosis and against tabes and varicose ulcers? Yes, determination is a quality that means much to a doctor and we may well be thankful that our racial endowment has been fairly generous in this respect. But we live in an age that accentuates achievement and discounts endeavor. On all sides short cuts are being devised and effortless solutions propounded. Quick wits are valued higher than stout hearts. The telling advertisement of the charlatan or the convincing selfpraise of the qualified quack make a stronger appeal than the steady, unostentatious but thoughtful pertinacity of the good practitioner.

We may console ourselves with the knowledge that we are not alone in this situation. The manufacturer, the builder, the publisher, the educationist, all will tell you the same tale. The public of today is increasingly superficial in its judgments. It looks for immediate returns and surface values. It is too impatient to assess durability and too shallow to investigate hidden worth. This is one of the reasons why good doctoring is not appreciated today as we might expect it to be. For good doctoring is thorough doctoring, and a thorough doctor is a man with determination. But this failure on the part of the public is, I believe, a transient phase. It comes from a shallow materialism that belongs to the halfeducated classes. As the educated classes become more truly educated there will be a reaction, I venture to hope, in favor of thorough work and durable goods. When that change comes I hope and believe that our nation in general and our profession in particular will come into their own. For, say what you like, we are on the whole a thorough race. Our thoroughness makes us slow and our American cousins get there before us. It makes us and our goods dear and the continental undersells us. Nevertheless I hope we may never sell our birthright of thoroughness for any mess of pottage, commercial or professional. We are, I think, notably free from that spirit of "make do" that characterizes some other races. I have contemplated an Italian medical student dressing a wound and a French cavalryman grooming his horse; I have investigated a German mechanical toy and the carburettor of an American car and in each case I have been able to reflect, I think with justice, that in Britain we do these things more thoroughly.

SOLEMNITY

So much then for John Bull's determination. I have said that he wears an expression of menacing solemnity. Are we to admit that this is deserved? If it be in truth a racial characteristic it is unfortunate for us doctors for a solemn doctor is generally a pedant and that is nearly as inappropriate as being frivolous. True, we lack profoundly the animation of the Latin races and the emotional range of the Celts, but we can at least hold on to the fact that we are not as stolid as the Teutons. Let us leave it at that, lest we find ourselves involved in the fruitless discussion as to whether a Scotchman can see a joke.

COMMON SENSE

But let us go a little further than the cartoonists' symbol can take us. What further characteristics can we boast of, or must we confess to, and what has been their influence on our profession? I think the first is common sense. This is a quality that some other races take little notice of. Indeed there are languages in which the idea can only be expressed by a periphrasis. The Englishman has always prided himself on common sense. He has made it (in the form of a jury) into a legal force. He has continually pitted common sense against technical and expert opinion, sometimes if not often with disastrous results. Common sense is the quality which depresses reformers and would be reformers in this country. Whether it be a fruitarian diet or an E. R. A. cult, an esoteric cure for tuberculosis or a social revolution, it is common sense backed by traditionalism that seems to save us. But it is clearly possible to be misled by an undue dependence on common sense, and it must, I think, be admitted that our national worship

of common sense is the cause of our frequent failure to give adequate weight to expert opinion. For instance, I venture to say that in no country has education been so predominantly controlled by laymen as in our own. Educational experts are now coming into their own, much as is the case in other lands, but hitherto we have applied the common sense principle and trusted to those without expert knowledge to direct a great part of our educational activities.

In medical matters it is our common sense that makes us sceptical of new methods especially if these be based on farfetched theories. I recall in this connection a new cure for tuberculosis which its foreign discoverer tried to launch in this country. It consisted of injections of immunized crocodile serum. The theory on which it was based was that only amphibians had blood platelets of the same shape as ours and that therefore only their serum could convey acquired immunity to the human subject. As far as my knowledge goes, this benefactor of the human race gave up very speedily the unequal contest with British common sense and beat a retreat to somewhere nearer home. On the other hand there are historical examples of real reforms that have been resisted in the name of common sense. Lister's antiseptic methods were, as you may read in his biography, known and practised on the continent when in this country he had hardly a following. They did not appeal to the common sense of British surgeons of the day. Indeed the whole of our professional work must necessarily involve a balancing of two points of view—on the one hand the particular and theoretical, and on the other hand the general and practical. Plato claimed that "a sense for the whole is the sign of the sound mind." Sometimes we trust that "sense for the whole" too much, and at other times not enough. But in general it may be said that if we tend to rely too much on our common sense, it is usually safer for our patients than if we lost sight of the whole in exaggerated enthusiasm over a single hypothesis.

SPIRIT OF FAIR PLAY

There is another and important attribute which impartial observers usually attribute to our race. It is the spirit of fair play. In all his work a doctor tends to be in a position of advantage. We sometimes forget this. We think of ourselves as being at the mercy of inconsiderate patients who call us out of our beds on inadequate grounds, or of capricious patients who discard us when they imagine that some one else can cure them more quickly. But in point of fact it is we who generally hold the trump cards and it is the spirit of fair play that prevents us from making use of them. In the first place any doctor can frighten a patient and in the second place any doctor can bewilder a patient. If we are sufficiently cowardly and sufficiently unscrupulous, how easy it is for us to impress the patient unduly with the severity of his complaint and how easy to talk in technical terms, incomprehensible to him, of the baffling nature of that complaint. Once upon a time I practised in a foreign health resort. A native practitioner who combined broken English with perfect foreign manners had a large clientèle of English and American visitors. His methods were extraordinarily simple. The first time he saw the patient he told her—they were mostly women—that she was suffering from bloodlessness, that her symptoms were all due to "cerebral anemia" and that he could cure that by a course of injections. The course would last six weeks and he would give two injections a day. Yes, it was a great pity that English doctors didn't know about these injections. Having duly administered with his own hand two injections of iron and arsenic for forty days, he explained that the patient was no longer anemic, that he had just caught the disease in time and that now the patient's nerves needed electrical treatment. For this he proposed a six weeks' course of electricity which came from a small coil that he carried about in his bag. At suitable intervals the patient was made to realize how serious the consequences were of allowing the nerve cells to deteriorate for lack of skilled treatment. In all this one felt a natural revulsion from the unscrupulous trading upon the patient's ignorance and credulity, notably the latter. I suppose there are doctors in our country that would stoop to such methods but on the whole I think our sense of fair play keeps us from exploiting our patients and that whatever other shortcomings we have we can honestly claim that our patients get as square a deal as patients in any other country—and perhaps a little more. Commercial exploitation is not, however, the only form that exploitation takes. In some countries the spirit of clinical research is stronger than it is with us. When I cast my eye over the literature that accompanies some new chemical preparation from Germany, with its glowing account of extensive clinical trials, I am prone to wonder how many patients are unwittingly sacrificed on the altar of pharmacological research. And on the whole one is glad that the medical men of other countries are so zealous in trying out new remedies, so that we may offer to our patients new drugs of which something at any rate is already known.

But it is not only in practice that the spirit of fair play counts for so much. In the matter of examinations and the granting of degrees much depends on even-handed justice. The public needs protection, and where there is any taint of corruption in examining bodies it is obvious that ill qualified doctors must be let loose on the helpless community. In this connection I recall an incident at an Italian university that is worth recording. If we are to believe all we hear of Mussolini's purgative power, we may surmise that such an incident belongs to past history. Clinical examinations are, or were, conducted in public. I was present at the examination in clinical medicine for the degree examination. There were two examiners; one was the principal of the university, a man whose name would be familiar to every one of you; the other was a professor well known in his country. A candidate was summoned and sent to examine a case of acute lobar pneumonia about the seventh day. A friend of mine whispered to me "Listen carefully; this man knows nothing, but you will see that he passes for he is protected." This meant that some influential friend had "recommended" the candidate to one of the examiners. The professor took him in hand, while the principal studiously read a newspaper. This was an imperative act of courtesy. If he had listened, or appeared to listen, to the questioning, it would have suggested

that he doubted his colleague's complete impartiality. The candidate, having completed his examination, began his crossexamination rather unfortunately. In fact he placed the pneumonia on the wrong side. However that was passed over. A few very general questions on pneumonia failed to reveal any very intimate acquaintance with the disease. At last the professor said, "Pneumonia is a selflimited fever, is it not?" "Yes, sir." "And it lasts seven . . ." "weeks," added the candidate, with an air of one who has at last touched bottom. A fortnight later he was a qualified doctor.

There is yet another aspect of this spirit of fair play that I think is worth touching on. I suppose you and I have all felt pretty often a sense of acute exasperation at the misplaced sentiment, exaggerated humanitarianism and special pleading of the antivivisectionists. They deserve little of the community. Nevertheless it behoves us to remember that our very stringent Home Office regulations might well be copied in other countries. I once went into the sideroom of a surgical ward in a large foreign hospital. I found my friend the house surgeon, assisted by a clerk, dissecting out the thymus in a puppy. I asked if they had given it any anesthetic but they explained that if they had it might have died. You probably feel that such an incident could not have happened in this country whether we had regulations on the subject or not. Be that is it may, I think we can all agree that fair play to patients, to candidates and even to puppies, is solid ground for modest gratification.

MODESTY

And now I turn to a very different characteristic of our race. I have just used the adjective modest. Sexually we claim to be modest and modesty is, by the critic, generally pronounced prudery. How far we are modest and how far we are prudish I do not propose to discuss. My psychoanalytical friends will explain to you, if you care to ask them, how all modesty *is* prudery. Be that as it may, this racial characteristic affects medical practice in ways that are so obvious that I need not stop to point them out. I would like, however, to draw your attention to one aspect of it.

There is no other civilized race in which lay opinion is so wilfully ignorant of elementary anatomy and physiology. Let me give two little incidents as a contrast. Some time ago a bishop's wife told a woman friend that she was in great distress because her sister had just had "a dreadful internal operation," adding "Of course I don't understand what it was but—you know—something to do with her inside." In point of fact the operation was an oöphorectomy. Shortly after this we were staying in France. One morning Yvonne, our pleasant chambermaid, appeared with very red eyes. My wife asked her if anything was wrong and at once she answered, *"C'est que ma soeur vient d'être operée pour une salpingite."* She knew all about salpingitis. For her there was no vague "internal operation." Medical men in this country take for granted a complete ignorance on the part of their patients. They do not realize how much better informed most foreigners are in matters of health and disease. Hence as a profession we are enabled or encouraged to assume an air of professional aloofness which patients of other races would not tolerate for a moment. I have frequently heard complaints on this score from foreigners and from English patients accustomed to foreign doctors. They say that the English physician resents their asking for any explanations, as if it were an equivalent to an aspersion on his competence. I believe that the best doctors realize that ultimately it is the soundest policy to spend time and exercise patience in helping both invalids and relatives to understand a little what is wrong with them and what the immediate aim of treatment is. In fact I rather think that we need to "come off the perch" of medical sacerdotalism.

OBJECTIVITY

And now I come to the last and perhaps the most unfailing of John Bull's attributes. He is incorrigibly objective. Anything that he can see and feel counts with him. I venture to say that the intangible, the speculative, the metaphysical, make less appeal to us than to any other race. John Bull has prided himself for generations on the number of things that he could not be bothered with because he considered them damned nonsense. For generations he has congratulated himself on being "downright;" on being a "plain Englishman"—in fact, on being everything but subtle. We are indeed the least subtle of races. As the European is to the Oriental, so is the Englishman to the continental. Life for the Anglo-Saxon is an affair of black and white. Where others put in shading we impatiently demand extremes.

Now this objective spirit runs through our whole national life and in the sphere of therapeutics it is constantly operative. Consider a few examples. Take an eczematous child. The obvious thing to do is to apply an ointment. When that has failed and perhaps many others the diet may be regulated. When the case is becoming chronic we murmur something about "constitutional." But if you ask Dr. John Bull whether he has inquired into a famliy history of asthma, he thinks you are clearly paraphrenic. Yet some profound hereditary flaw exists, probably in the endocrine system, which conditions asthma in a mother and eczema in her child. Can you get a selfrespecting Anglo-Saxon physician to interest himself in a theory so fantastic? I trow not.

Again take varicose veins and ulcers. Local applications, support, even excision—all these are objective and downright methods. But parathyroid treatment, based on an abstruse theory of the calcium content of the blood—this is sheer speculation—let us try another elastic stocking!

Again consider epilepsy and petit mal. We understand very little of the etiology of these conditions, yet in the war we saw enough of these conditions to realize that between epilepsy of the socalled idiopathic variety and hysteroepilepsy there is no sharp line of cleavage. Let me give you an example. A young woman of seventeen, in every other way healthy and well developed, suffered from petit mal. She had been treated by several of the best known neurologists of the land. Some had advised bromides, some had prescribed luminal. All had agreed that "her brain must have a rest," consequently her education had been completely suspended and she had been treated as a partial invalid. When she

came under treatment she was having an average of eight attacks a day. Now she has much less than that in a week, despite the complete suspension of sedatives. Treatment was begun in no very sanguine spirit for there was nothing obvious to suggest the presence of serious conflicts and repressions but gradually there began to emerge a picture of considerable interest. First we saw a rather complex emotional attitude to the parents and a definite resistance to growing-up. Then by hypnoanalysis a number of completely forgotten emotional experiences were recalled. Then from her dreams she discovered how the petit mal had been used and maintained as a defense against facing the dangerous and the uncongenial in life. Finally a sex perversion of considerable importance was brought to light. The result is that now no attack occurs which the patient is not able to refer to a specific emotional conflict. But there is a further point of great interest. Whereas the patient had never suffered from grand mal, she has during the latter stages of treatment had five major attacks and each one of these attributed by herself to an acute emotional conflict. I believe this patient will be completely cured.

Do not imagine that I am contending that all epilepsy is due to emotional causes, still less that I am propounding a theory of the disease. I know just as little as you do of the real nature of the cortical instability which manifests itself in epilepsy. But I have recorded this case as an illustration of the failure of the objective physician. A fit associated with high blood pressure or with acidosis is a thing he can get hold of—he sees an alternative to mere symptomatic therapy in the possibility of treating a definite physiological defect. Treatment of a "cause" that gives definite mercurial readings or chemical reactions appeals to the man of objective mind. But it is fortunate for mankind (if embarrassing to the John Bull mind) that man is more than a bundle of physiological reactions, and therefore a patient is not merely a case but also a personality.

Hence, the physician, who would accept his full commission, must take into his purview factors of thought and feeling, of instinct and emotion, of training and temperament. He must realize the numberless subtle points at which emotional experience can produce physical reactions. He must face the fact that cortical localization is no final conception in medicine and that even biochemistry is subtly involved in the processes of thinking and feeling.

Our racial objectivity endows us with a strong resistance to such vague and undemonstrable views. We feel that when we have gone as far as laboratory investigation will take us we have gone as far as any selfrespecting practitioner is required to go. And so it comes about that in countries where speculative thought is less scorned, advances are being made beyond anything that we can show in this country, in a therapy that takes into account the subjective experiences of a patient in a way that is eminently called for. If you doubt me, I ask each of you to think of the last patient who consulted you about a phobia or an obsession. Perhaps he was a healthy man in middle life, whose family you had looked after for years. Perhaps he began with an embarrassed and shamefaced confession that he seemed to be "getting very queer and that he didn't like it but the fact was he couldn't stand being left in a room alone, and that when he was he would either slip out or creep to the door and open it stealthily." Now recall what you said and did to that patient. You began by feeling his pulse and inspecting his tongue and carefully auscultating his heart. During this examination you felt that you were grimly holding on to the realities of life and disease but you were probably haunted by the uncomfortable feeling that you had never yet detected an aortic murmur in a patient who complained only of a phobia. Then you proceeded to tell him that he was as sound as a bell and that it was merely a matter of "nerves" for which you proceeded to prescribe what you told him was a nerve tonic. Now I ask you what you meant by the word nerves in this context? Not I presume the central nervous system, still less the peripheral. You used a word with an objective denotation for a subjective connotation. May I suggest that you were using a popular phrase to describe something you didn't understand, that you were in fact trying to persuade yourself that this intangible syndrome with its mysterious etiology really had a concrete and structural basis of a neurological character? And, having committed yourself to this illuminating diagnosis of nerves am I not right in surmizing that you proceeded to combat the disease with the following remedies: bromides, ridicule, valerian, golf, a pluriglandular extract of brain substance, and a sea voyage? Perhaps it would be cynical to suggest that when you offered the last named remedy you secretly hoped that the patient would not return from it.

Now I venture to submit that this is a perfectly legitimate picture of the therapeutic morass in which we find ourselves when we endeavor to reduce to objective categories, symptoms that are essentially subjective. I do not contend, please note, that the etiology of a phobia must be exclusively psychic, but I do strongly hold, and beg you to remember, that we cannot begin to treat such conditions successfully until we have schooled our objective Anglo-Saxon minds to contemplate an etiology that is not exclusively objective. You may possibly throw back at me some of my own views expressed in an earlier part of this paper, suggesting that I am now asking you to plunge into empiricism and metaphysics. I reply on the other hand that there is nothing so unworthy of our medical tradition as to prescribe remedies for which we can give no rational justification and to which we can attribute no therapeutic efficacy. And I maintain that the people who get the best results in such a case as I have described are those who unite an insight into the complexities of personalities with a knowledge of the human machine and its workings.

CONCLUSION

And so we see that to the John Bull spirit we of our profession owe much, or ought at least so to do. Yet we must acknowledge that it implies certain tendencies, notably to rigidity on the one hand and to a lack of vision on the other. I see no reason why we should not improve ourselves in these ways, provided that we recognize them as limitations instead of complacently glorying in our shortcomings.

146 Harley Street W 1.

Acute Pericarditis

HERMAN ELWYN, M.D.

New York

The seeming increase in rheumatic cardiac disease in recent years demands on the part of the physician a better understanding of those manifestations which indicate the degree of severity with which the heart is affected. Such a manifestation is the appearance of acute pericarditis in the course of rheumatic fever or of rheumatic cardiac affection. Acute pericarditis occurs also in the course of other diseases and although it is always secondary to such a disease yet it may at times constitute the only or the earliest manifestation. The physician who wants to evaluate properly the significance of an acute pericarditis must be familiar with its clinical manifestations, its progress and course, and with the diseases in the course of which it commonly occurs.

FUNCTIONAL CONSIDERATIONS

The presence of an inflammatory exudate in the pericardium modifies the function of the heart in a twofold manner. First, the inflammation is not strictly limited to the epicardial layer but involves also the ventricle itself to a variable depth. The contractility of the involved muscular fibres is necessarily impaired. The extent of such impairment is dependent upon the original disease, upon the virulence of the infecting organism, and upon the inflammatory reaction in the layers of the ventricle.

Secondly, the function of the heart is influenced mechanically by the amount of the exudate. When this is purely fibrinous, the amount is usually not sufficient to cause any mechanical embarrassment of the heart. When the exudate is liquid, such embarrassment is dependent upon two factors, the amount of the exudate, and the slowness or rapidity with which it accumulates. This problem has been carefully studied by Cohnheim (1), and his results corroborated by Starling (2), and others.

Normally, the pericardial sac is practically an inelastic membrane and one of its functions is to prevent the overdistention of the heart. When fluid is suddenly injected into the pericardium the sac is put under tension and holds only a limited quantity, from 150 to 200 c. c. Greater quantities may be injected under pressure and this is followed by an alteration in the structure of the parietal layer. When the pericardium is inflamed, and when fluid accumulates gradually in the sac, the parietal layer becomes thin, atrophied, and stretched sufficiently to allow the accumulation of fluid up to two litres and more. The mechanical effect of the fluid differs, therefore, whether it accumulates slowly or is suddenly thrown in the pericardium.

An example of sudden accumulation of fluid is found in the case of rupture of the heart with resulting hemopericardium. Here the presence of 150 to 200 c. c. of blood in the pericardium is sufficient to cause death. The manner in which death occurs in such a sudden accumulation of fluid has been settled by the experiments of Cohnheim. He found that the injection of a certain amount of oil in the intact pericardium is followed by a fall in the arterial and a rise in the venous pressure. Starling found that, following the injection of 70 c. c. of oil into the pericardial sac, the arterial pressure fell and the pressure in the portal vein and in the inferior vena cava rose. The ventricular output is diminished until no more blood is expelled by the ventricles. According to Cohnheim the ventricles still continued to beat for some period, which is shown by the pulsation of the oil manometer, but as no blood is expelled the contractions soon cease.

There have been various explanations for the behavior of the heart under these circumstances. Some observers have held that the presence of the fluid in the pericardium prevents the ventricles from expanding sufficiently in diastole. Others have assumed a reflex effect of the depressor nerve on the vasomotor centre. The inferences which Cohnheim has drawn from his experiments rightly explain the manner in which the heart behaves following the sudden filling of the pericardium with fluid. According to Cohnheim, the sudden filling puts the inelastic sac on the stretch. This causes a compression of mouths of the venæ cavæ, and also prevents the more easily compressible auricles from expanding properly in diastole. The result is a diminished inflow into the auricles, a diminished ventricular output, and increase in venous pressure. As the latter increases it overcomes at first the hindrance to the inflow into the auricles. But as the pericardium is put more and more on the stretch, the venous pressure is unable to overcome the hindrance, blood does not enter the auricles, and the heart pumps itself dry and soon ceases to contract.

When the fluid in the pericardium accumulates slowly, as occurs in the case of most inflammatory exudates, the pericardium becomes adapted to its contents by stretching and thinning. Under these circumstances it may contain a considerable amount of fluid without markedly interfering with the inflow of the blood into the auricles and without much lessening of the ventricular output. When the amount of fluids becomes sufficiently large, the eventual effect on the heart is similar to that of a sudden filling. The tension on the venæ cavæ and the pressure on the auricles result in a diminished auricular filling and a diminished ventricular output.

Of some importance is the knowledge as to where the fluid first accumulates in the pericardium. The older clinicians, such as Skoda and Bamberger, had already recognized the fact that the fluid accumulates early at the base of the heart, in the socalled recess of the pericardium in the region of the great vessels. Experimental investigations (Williamson, 3) have shown that a small amount of fluid first accumulates on the surface of the diaphragm at the margin of the heart. When the quantity is larger, it fills the pericardial recess at the base of the heart. According to Curschmann (4) the heart is pressed anteriorly and, when the quantity is large, is in contact with the chest wall. On opening the pericardium, the heart sinks posteriorly with the outflow of the fluid.

When the fluid in the pericardium is sufficiently large it exerts pressure on the neighboring organs. As the fluid accumulates at the base of the heart, especially at the left side, the upper lobe of the left lung retracts. With the increase in amount of fluid there is a retraction and later a compression of a part of the left lower lobe posteriorly. These retractions produce physical signs which are of diagnostic value. Compression of the mediastinal structures such as the esophagus or the trachea is extremely rare, occurring only with extremely large effusions.

CLINICAL FORMS OF ACUTE PERICARDITIS

Acute pericarditis occurs occasionally in the course of many of the infectious diseases, in leucemia, scurvy, and purpura hemorrhagica. It occurs occasionally in the course of the various forms of sepsis due to the streptococcus, the staphylococcus, the pneumococcus, or the gonococcus. It occurs by extension from a neighboring local infection, such as a mediastinal abscess, empyema, or abscess of the liver which perforates into the pericardium. In all these affections acute pericarditis is of rare occurrence. Clinically it is entirely overshadowed by the original disease and in some it is a precursor of death. In certain other diseases, acute pericarditis occurs much more frequently and is of much greater clinical importance. To the clinician an acute pericarditis first calls to mind the possible presence of acute rheumatic fever, of tuberculosis, of pneumonia, of myocardial infarction, of the possible presence of a tumor. The clinical forms of acute pericarditis include therefore: Pericarditis in the course of rheumatic heart disease, tuberculous pericarditis, as a complication of pneumonia, in uremia, in myocardial infarction, in tumor of the pericardium, and rarer forms.

PERICARDITIS IN THE COURSE OF RHEUMATIC HEART DISEASE

Acute rheumatic fever is by far the most frequent cause of acute pericarditis. The frequency with which it occurs varies considerably with the individual organs. Among the older clinicians, Latham (5) found in 136 cases of acute rheumatism the heart involved in ninety, the pericardium in nine, the pericardium and the endocardium in eleven. Bamberger (6) found pericarditis in fourteen per cent. of cases. Sibson (7) found twenty per cent. in 326 cases of acute rheumatism, Sansom (8), thirty-five per cent., Schrötter (9), thirty per cent., Rolly (10) found three per cent. in 911 cases of rheumatic fever; according to Jochman (11) it occurs in ten to twenty per cent. of the cases in children. Coombs (12) (p. 199) found evidence of acute pericarditis only in forty-four of 346 cases, or thirteen per cent., "yet postmortem evidence shows that the pericardium is or has been inflamed in over fifty per cent. of all cases."

More illuminating are the figures given by Coombs from the Bristol General Hospital as regards patients dying of rheumatic heart disease (p. 69): "In patients dying in the first decade 100 per cent. showed pericardial lesions; in the second, 83.3 per cent.; in the third, 41.6 per cent.; in the fourth, 23.0 per cent.; after the age of forty, 26.0 per cent.; and taking all ages together, 53.0 per cent."

The character of the pericardial exudate in rheumatic heart disease is fibrinous, serous, or serofibrinous, frequently also hemorrhagic. The latter is often due to rupture of small newly formed vessels in the vascular granulation tissue. In cases where paracentesis of the pericardium has been performed, the rupture of a small bloodvessel by the needle is responsible for the admixture of blood. The serous exudate is yellow to greenish, clear to cloudy. The quantity varies from one hundred to four hundred c. c.; larger quantities are not common, but occur occasionally.

Of great importance in showing the connection between rheumatic pericarditis and rheumatic infection of the heart has been the recent finding of specific rheumatic nodules or Aschoff bodies in the subendothelial layer of the epicardium. The nodules consist of large cells with one or more vesicular nuclei clustered together in a fibrinous matrix, accompanied by mononuclear cells and leucocytes. They have been found in the epicardium by Coombs, by Mönckeberg (13), and by MacCallum (14).

CLINICAL FEATURES

The connection between pericarditis and rheumatic fever has been known since the time of Pitcairn. Its recognition had been difficult previous to the discovery of the friction sound. Latham, in his lectures on diseases of the heart (p. 83), says that the older clinicians "when in the midst of acute rheumatism, there arose a precordial pain, an anguish of respiration, and an irregular action of the heart, they interpreted them to denote pericarditis, and they were generally right."

At the present time we have learned to watch constantly the cases of acute rheumatic fever for the appearance of signs of pericarditis. It may appear at any time in the course of the disease, even before the appearance of the joint symptoms and after their disappearance. We may expect the presence of an acute pericarditis in the course of acute rheumatic fever even before the appearance of the physical signs by the rise in temperature, the pain, and the general appearance of the patient. Although by themselves not characteristic, yet their collective presence calls at once for a thorough examination for the presence of a friction sound or of the characteristic increase in cardiac dullness. It must be fully realized, however, that acute pericarditis may be entirely latent without any subjective manifestation and without any rise in temperature. But when in the course of rheumatic fever or of rheumatic cardiac disease, there occurs a sudden or gradual rise in temperature to 102° or 103°, one should immediately suspect the presence of an active rheumatic infection of the heart, and that it may have spread to the pericardium.

Pain in acute pericarditis is an extremely variable symptom; it is most commonly referred to the sternum or the precordia, occasionally to the epigastrium, between the shoulder blades, or to the muscles of the throat and neck. The pain is usually localized and moderate in degree, but there are cases in which it becomes very severe with the intensity, character, and radiation of a typical attack of angina pectoris.

The general appearance is in some manner characteristic. The patient is pale, with a distinctive milky white appearance of the face. The pallor is not commensurate with the degree of anemia which is usually present and is probably dependent upon the contrac-

tion of the superficial vessels of the skin. The milky white appearance of the face accompanied by a slight degree of cyanosis of the lips and some degree of dyspnea which causes the patient, usually a child or young person, to prefer the half sitting position, gives a distinctive general appearance. I have repeatedly seen one of my clinical teachers make the correct diagnosis of acute pericarditis on the general appearance alone. This, with the rise in temperature and the pain, causes the experienced clinician strongly to suspect that the rheumatic affection of the heart has spread to the pericardium.

Other symptoms are occasionally present. In one case, that of a young man of twenty years, with a mild attack of acute rheumatic fever, the sudden appearance of hiccough and of pain in the left shoulder accompanied by a rise in temperature aroused the suspicion of the presence of an acute pericarditis contiguous to the diaphragm. Twelve hours later the appearance of a pericardial friction sound confirmed the diagnosis.

Difficulty in swallowing has been described by many, and the cases of Sibson are usually cited by most writers. I have not seen a case in which difficulty in swallowing was a distinct symptom, but I remember the case of a young girl of fourteen years with a large pericardial effusion in which the pain in the sternal region was aggravated by swallowing. Dyspnea is marked when the effusion is large, but it is also frequently present when the exudate is mainly fibrinous. When the latter is the case the dyspnea is probably dependent upon the myocardial involvement. In fact, in all these symptoms, the pain, the dyspnea, and the fever, it is not always easy to separate the pericardial from the myocardial factor. It is for this reason that the recognition of the pericarditis is important, as it indicates the severity of the myocardial affection. In the last analysis this recognition is dependent upon hearing the friction sound and upon the changes on percussion.

The friction sound in acute pericarditis has been considered as diagnostic of this disease since the time of Collin. When typical and marked the sound has a rasping or scratching quality sometimes resembling the creaking of leather. It seems to be close to the ear, is not propagated beyond the borders of the heart, and is heard throughout both systole and diastole, being broken up in an irregular manner so that it is not synchronous with either systole or diastole. The pericardial friction sound is, however, not always typical. It varies a good deal in loudness, being at times very soft, and only audible after the patient changes his position either lying down or sitting up.

There are a few important factors to be kept in mind in connection with this friction sound. It can be heard at times even when a considerable amount of fluid is present in the pericardial sac, and it can be heard through a thick layer of either serous or fibrinous exudate. It may be entirely absent even in the presence of a fibrinous exudate. Its appearance is often preceded by a reduplication of the second sound, and at times it closely synchronizes either with systole or diastole or with both. Thus on two occasions the appearance of a diastolic murmur over the aortic area led to the diagnosis of acute rheumatic endocarditis involving the aortic valve. On both occasions this was followed a few days later by a more typical friction sound, and when the acute pericarditis had subsided there was no evidence of involvement of the aortic valve. Another important point is the appearance and disappearance of the friction sound within a few hours or from day to day. Latham in his lectures on the heart calls attention to this point. When the friction sound has a rasping or creaking quality it can often be felt as a thrill by the hand laid over the region of the heart. A pleuropericardial friction sound which is produced in the pleura overlying the border of the heart must not be confused with a true pericardial sound.

When the pericardial friction sound is heard the diagnosis of acute pericarditis is certain. Whether or not there is an accumulation of fluid in the pericardium must be determined by percussion. Here the knowledge of where the fluid accumulates is of value. From the experiments of Williamson, previously mentioned, we know that the fluid first accumulates over the diaphragm at the lower margin of the heart where we are unable to recognize its presence by physical signs. The next place where the fluid accumulates is at the base of the heart and here we are able to determine its presence by percussion. The extension of cardiac dullness upward into the second left interspace is the earliest physical sign of the presence of fluid in the pericardium. As the fluid increases in amount the dullness changes to flatness in this area and extends further to the left and also to the upper part of the sternum. The presence of such an area of increasing dullness or flatness with the presence of a friction sound unquestionably signifies an acute pericarditis with effusion. This percussion sign is of greatest diagnostic value, and even its presence alone should make one suspicious of pericardial effusion. The dullness or flatness in the second and the first left interspaces is due to the fluid in the pericardium taking the place of that part of the lung which is pushed aside. Stokes (15) cites a case (p. 57) with pleuritis and pericardial effusion "in which the singular phenomena occurred of the thrusting upwards of the lung so as to form a very large tumor above the clavicle."

Further evidence of the presence of a pericardial effusion obtainable by percussion is the existence of an area of dullness over the lower lobe of the left lung posteriorly. This area of dullness varies with the amount of effusion. It is never really flat, and vesicular breathing is usually heard over this area although slightly or considerably diminished. Only rarely is it replaced by distant bronchial breathing. This area of dullness is probably always present when there is a considerable amount of fluid in the pericardium. The explanation for its presence is to be found in the partial compression of the left lower lobe by the pericardial effusion. This sign was already noticed by Stokes, but he ascribed it to an accompanying inflammation of the lung. Other writers who speak of a rheumatic pneumonia have probably confused the presence of a compressed left lower lobe with true pneumonia. A recent writer has attempted to explain the presence of this sign by assuming a massive collapse of the left lower lobe. In a true massive collapse, however, the breath sounds are entirely absent, and not only diminished as in this sign. It is important to recognize that this area of dullness is due to the pericardial effusion, as its resemblance to the

signs of effusion in the pleural cavity has led to the useless tapping of this cavity.

With the increase in the amount of the pericardial effusion the dullness and flatness extends further down on the left side, and also to the right of the sternum. The apex beat frequently disappears. When the latter is still palpable the presence of the area of dullness or flatness outside of the apex beat is of diagnostic value. Leube considers it as the one sign of effusion in the pericardium. Of diagnostic value is also the change of the entire cardiac dullness to a wooden flatness.

With the increase in the amount of fluid the heart sounds and the friction sound frequently disappear, to reappear when the fluid becomes absorbed. But again one must keep in mind that the heart sounds as well as the friction sound may be heard throughout the entire course of the disease, even with a large amount of fluid.

An area of dullness obliterating or changing the cardiohepatic angle has been described by some writers. In my experience this is seldom present unless the amount of fluid is large. It is certainly not an early sign.

The character and frequency of the pulse are dependent a good deal upon the myocardial involvement. When fluid is present the frequency of the pulse varies from 100 to 160. The blood pressure is reduced, the pulse is small, sometimes collapsing, and in some cases cannot be felt during inspiration—the pulsus paradoxus. The jugular veins are distended and a positive venous pulse is occasionally observed.

Röntgen examination is, of course, of great value in the diagnosis of pericarditis with effusion. In the main the changes in the cardiac shadow correspond to the findings of percussion. For details the reader must look through the special works on the röntgen examination of the heart.

TUBERCULOUS PERICARDITIS

The occurrence of this form is much less frequent than that of rheumatic pericarditis. The frequency cannot be properly estimated from statistical tables inasmuch as many pathologists assume that cases of adherent pericardium which do not show any evidence of tuberculosis may well be the end result of a previous tuberculous pericarditis. Among the statistical tables available are those of Norris (16) who found eighty-two cases of tuberculous pericarditis among 7,219 general autopsies, 1,780 of which were autopsies on clinically tuberculous individuals. Norris also records three cases of tuberculosis of the pericardium among 387 autopsies at the Phipps Institute. Willigk, cited by Mönckeberg, found eleven cases among 1,317 autopsies on tuberculous individuals. Waller (17) in a recent paper reports three cases of tuberculous pericarditis among a total of eighty-three cases of pericarditis admitted to St. George's Hospital in London. There are no statistical tables available as to the occurrence clinically of tuberculous pericarditis in the various large institutions for the treatment of pulmonary tuberculosis.

The occurrence of cases of primary tuberculous pericarditis in which no other focus of tuberculosis can be found is exceedingly rare. Such cases have been reported by Simmonds (18), Scagliosi (19), Riesman (20), and recently by Hedblom (21).

The manner in which the pericardium becomes infected is not at all clear. In some cases infection occurs by way of the blood stream, in others occasionally by direct extension from a tuberculous mediastinal lymph node, or by its perforation into the pericardium. In the greater number of cases the pericardium is probably infected from the mediastinal lymph nodes by way of the lymphatics. The infection usually occurs first in the upper part of the pericardium where it is reflected on the great vessels. Here conglomerate tubercles are formed and from there they spread over the visceral and parietal layers.

The changes in the pericardium assume various forms. In the more chronic cases a fibrinous exudate is formed by which the two layers of the pericardium are glued together. This exudate is invaded by tuberculous granulation tissue which later becomes caseous, which sometimes forms a layer completely surrounding the heart. In some cases this caseous layer becomes liquified and absorbed, and is later replaced by a nonspecific granulation tissue. In such cases the end result is an adherent pericardium, the tuberculous nature of which may or may not be recognizable.

In other cases the formation of tubercles in the pericardium is accompanied by an exudate which is sometimes serofibrinous, frequently hemorrhagic, rarely purulent. The amount of the exudate may reach two litres. Musser (22) reported a case with 2,790 grams of hemorrhagic exudate. The layers of the pericardium become thickened, with the formation of ulcers on their surfaces. In some cases the fluid exudate is absorbed leaving a caseous layer which is pervaded by granulation tissue or by lime salts resulting eventually in an adherent pericardium or in calcification.

In the acute cases the exudate is also either fibrinous, serous, or hemorrhagic. When the exudate is removed small gray tubercles are found on the surface of the pericardium. In some cases there is no macroscopical evidence of tuberculosis and the tuberculous character can only be recognized microscopically. Thorel (23) cites the case of a seventy-one year old woman reported by Fromberg. In this case Fromberg found in one section a giant cell and in another a group of epithelioid cells resembling a tubercle. There was no other evidence of tuberculosis, but in the fibrinous exudate numerous tubercle bacilli were found. In this case there was evidently a massive infection with virulent bacilli. In the greater number of cases tubercle bacilli are seldom obtained from the exudate.

THE CLINICAL COURSE

The clinical course of tuberculous pericarditis may be entirely latent and its presence discovered at the autopsy. This is especially the case in the chronic forms with adherent pericardium. In the acute cases precordial pain often directs attention to the heart and the presence of a friction sound is discovered. Pain, dyspnea, and other cardiac symptoms are much less frequent than in rheumatic pericarditis where the myocardium is severely affected by the rheumatic virus. When fluid accumulates the changes found on percussion and the pressure signs over the region of the left lung are those which we have discussed.

(*To be continued*)

A Supplementary Note on Benzyl Benzoate

DAVID I. MACHT, A.B., M.D., LL.B., Phar.D. (Hon.)

Baltimore, Md.

In December, 1917, before the annual meeting of the Pharmacological Society, I announced for the first time my studies on the relation between the chemical structure and pharmacological action of the opium alkaloids on smooth muscle, and called attention to the fact that the antispasmodic properties of papaverin and narcotin were due to the benzyl component of their molecules (1). In February, 1918, before the regular meeting of the Society for Experimental Biology and Medicine, I announced for the first time my studies on the benzyl esters, benzyl benzoate and benzyl acetate which were the outcome of my work on the opium alkaloids and showed that these esters produced antispasmodic effects on smooth muscle and smooth muscle viscera in most respects very similar to those of papaverin (2). The complete reports of my work were published in the *Journal of Pharmacology and Experimental Therapeutics* for June and July, 1918, and almost immediately after the first announcement of the findings with the benzyl esters, benzyl therapy came into vogue for all kinds of spasmodic conditions of smooth muscle viscera, and since then various new benzyl compounds have been synthesized by various chemists, and benzyl therapy has extended to Europe, Asia, Australia, and South America.

Perhaps the most remarkable feature of benzyl benzoate therapy is the low toxicity of the drug, owing to its being converted into and excreted as hippuric acid, as I pointed out. Since the introduction of benzyl benzoate into practice, eight years ago, I am not aware of any important case of poisoning following its use in thousands upon thousands of cases.

One of the indications I gave for the therapeutic use of benzyl benzoate was in circulatory conditions, especially in angina pectoris and high blood pressure due to angiospasm, and I published a paper on the subject in this Journal in 1920 (3). About a year ago, Gruber (4) published a paper on benzyl benzoate in which he asserted that he obtained little or no fall in blood pressure in various animals after injection of the drug. Owing to a prolonged illness I was unable to reply to this criticism and indeed on serious consideration did not think it important enough, in the face of the enormous clinical experience to the contrary. Inasmuch, however, as the work of Gruber has found ready acceptance in certain quarters where more critical judgment was to be expected, I have repeated some of my original experiments with benzyl benzoate and other benzyl esters in regard to the effects on blood pressure. The results of these experiments agreed in every particular with the original observations published by me. Inasmuch, however, as my original statements have either been misunderstood or misinterpreted, it is deemed desirable to make a short further statement on the subject.

In working with benzyl benzoate on intact animals, as for instance on blood pressure, it must be borne in mind that this drug is very slightly soluble in water; hence the experiments must be made with carefully prepared emulsions. Because of its poor solubility and consequent slow absorption, and because the chief effects of benzyl benzoate are probably exerted, as stated further on, after its hydrolysis, observations on blood pressure must be carried on over *considerable periods of time*. One cannot expect an immediate marked fall in blood pressure after an injection of an emulsion of benzyl benzoate, although such effects are occasionally produced; more usually, however, a fall in the blood pressure is noticed from fifteen to thirty minutes or later after injection of the drug.

Although there is a difference of opinion as to the mechanism of the antispasmodic effect of benzyl compounds on smooth muscle, and although it has been claimed by Snapper, Grünbaum and Rümke (5) that such complicated synthetic benzyl products as akinetone act by virtue of the whole molecule, it seems most probable that benzyl benzoate exerts its action chiefly after hydrolysis and probably during its passage through the stage of benzyl alcohol to further oxidation and metabolization as hippuric acid. The low toxicity of benzyl benzoate is undoubtedly due to conversion into hippuric acid and has been shown to hold for benzoates and related compounds by Schmiedeberg (6), Minkowski (7), Mosso (8), Jacquet (9), and others. Benzyl alcohol has already been shown by me to have a marked effect on the blood pressure (10), and it is interesting to call attention to the apparently independent work of Jacobson and Laugier (11), who also found that benzyl alcohol produced a marked fall in blood pressure and who in agreement with me concluded that such fall in pressure was *due to a peripheral vasodilatation*. The vasodilator effect of benzyl benzoate, benzyl alcohol and a number of other benzyl esters studied by me can be demonstrated easily, on the one hand, by perfusion experiments, and on the other hand by experiments on surviving arterial rings and strips.

Fall in blood pressure after benzyl benzoate and other benzyl compounds has been noted by other experimenters and clinicians, as well as by me, as for instance Neilsen and Higgins (12), by Laubry and Mougeot (13), by Pal (14), by Giani (15), and other investigators. In studying the effects of drugs on blood pressure, even a tyro recognizes that several factors are concerned. A drug may be a powerful vasodilator and yet not produce a fall in blood pressure in certain persons, through its stimulating effect on the vasomotor centre, e. g., caffeine. It is one of the remarkable properties of benzyl benzoate, and to some extent also of benzyl alcohol, that in ordinary doses it is very little depressant, and indeed may be actually stimulating to the vasomotor centre, so that after injections of it in the intact animal, while there may be a marked vasodilatation, especially of the splanchnic area, the stimulating effect on the medulla

counteracts this dilatation and keeps the blood pressure at a pretty high level. Experimentally in such cases the vasodilator effect of the drug can be and has been repeatedly demonstrated by me by destroying the vasomotor centre by pithing the animal.

My original statement that herbivora react more rapidly to the administration of benzyl benzoate than carnivora has been repeated by me and confirmed. The human being is in my opinion more susceptible to the effects of benzyl compounds than dogs and cats and even rabbits. I have administered benzyl benzoate to a large number of patients and normal human subjects, and a decided, often very marked, fall in both systolic and diastolic blood pressure was almost invariably noted, as measured by Riva-Rocci, or Tycos, and also by Erlanger's apparatus, unless the arteries were enormously calcified.

It is a well known law of nature that *vis medicatrix naturæ* tends to restore abnormal or pathological conditions of living organs and tissues to normal, and drugs exerting their action in the *same* direction are generally more effective in such conditions than in the normal state. Thus antipyretics given to normal persons produce little or no fall in temperature, whereas when administered to animals with hyperpyrexia they cause a prompt fall in temperature. Again, digitalis given to a normal animal or human being produces little or no slowing of the heart or any other important pharmacological effect on that organ, yet when administered in cases of broken compensation and in dilated hearts its powerful tonic effects in such cases are universally known. So it is with benzyl benzoate. While in laboratory experiments *in vitro* and to a large extent in whole animals its antispasmodic properties can be easily demonstrated, none the less the relaxing effects of the drug are much more marked in cases of abnormally heightened tonus or spasm of smooth muscle. Benzyl benzoate produces a sedative effect on the intestines and in many normal persons thus tends to cause mild constipation, but its marked sedative action on the intestinal musculature is best seen in cases of *excessive peristalsis* such as in diarrhea (16, 17, 18). Again, benzyl benzoate can be shown *in vitro* and *in vivo* to have a quieting effect on the uterine muscle of normal persons, but this sedative action bears no comparison to the remarkable relief obtained with this drug in cases of spastic dysmenorrhea, a fact which is admitted by a large number of gynecologists (19, 20, 21, 22, 23, 24). So in regard to the effect of benzyl benzoate on the blood pressure. Its antispasmodic effects are exhibited best where there is a spasm of the vessels. In my own experience I have administered the drug to patients with hypertension in so many cases and have obtained such marked lowering of the blood pressure that to my mind there can be absolutely no doubt in regard to its value in such conditions. In this opinion I have been supported by numerous reports from various clinicians. Nor is there any doubt in regard to the value of this drug in cases of coronary spasm or angina pectoris, as found by my clinical experience and also by Spach, Babcock and others (25, 26, 27, 28).

In a study of benzyl mandelate which was prepared for me by Dr. D. Base, the antispasmodic property of the benzyl group was again demonstrated both on animals and patients (29); and recently, these observations were further confirmed and extended with the new benzyl compound betilon, a sulphonated benzyl by Hintzelmann, Joachimglu and Ohle (30).

I do not deem it necessary in this place to adduce further evidence of a clinical nature in regard to the value of benzyl benzoate in various conditions, more particularly in regard to its effects on high blood pressure. I think it, however, worth while to repeat a statement I made in another publication which seems to be appropriate in this place:

"There is a tendency on the part of some writers on 'rational therapeutics' to underestimate the value of repeated, careful, and accurate,—in other words, scientific,—therapeutic or pharmacological observations on man, and to regard all such data as of much less importance than data obtained from a few laboratory experiments on animals even by a tyro pharmacologist. A favorite habit of such critics is to spurn such clinical data as being the products of 'psychic suggestion' or as mere 'impressions' on the part of the observers, or as explainable by 'reflex' reactions. However ingenious, elaborate and technically masterly laboratory and animal experiments may be, if the data furnished by the same are utterly at variance with the therapeutic effects of a given drug as noted repeatedly by careful clinical observers, such evidence must perforce be accepted with reservation and regarded as inconclusive, or to say the least, incomplete; unless indeed the only alternative can be proven, namely, that the animal in question reacts to the particular drug entirely differently. If, however, the latter alternative cannot be proven, and if the same problem when approached by a different method of experimentation yields data in complete agreement with clinical experience, it is but logical to conclude that the latter method of experimentation is scientifically the sounder one and the results yielded by it are the more reliable ones" (31).

The bearing of this passage on the present subject is obvious. In conclusion I wish to cite a sentence or two from the classical work of William Withering in his *Account of the Foxglove:*

"There are men who will hardly admit of anything which an author advances in support of a favorite medicine, and I allow they may have some cause for their hesitation; nor do I expect they will waive their usual modes of judging upon the present occasion." . . . "After all, in spite of opinion, prejudice, or error. time will fix the real value upon this discovery, and determine whether I have imposed upon myself and others, or contributed to the benefit of science and mankind."

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Dual Personality Apropos of an Unusual Case of Amnesia*

ALFRED GORDON, M.D.
Philadelphia

Consciousness of the ego concerning the psychic processes that are constantly taking place is a *sine qua non* of normal life. When this consciousness becomes disturbed and the ego can no more witness properly the mental activities, errors in ideas, in perceptions and in criticism will be the result. In psychoses in which the disturbances of consciousness play a most important rôle, the delusions are the direct result of the affected consciousness. Apart from psychoses, disturbances of consciousness may manifest themselves in many other conditions, among which amnesia is the most frequent. Here we find a great variety of disorders from the viewpoint of its etiology and pathogenesis.

Amnesia may be congenital, which is extremely rare. It may be caused by a traumatism. It may be due to organic cerebral lesions. It may follow acute visceral diseases or intoxications. Finally it may be associated with neuroses. As to the character of amnesia, the latter may be temporary or continuous; in the latter case it may become progressive. In the temporary form which is more frequent, it may be anterograde or retrograde. It may also be periodical. There are variations also in the intensity, in the quality and in the quantity of periods of mnemonic disturbances. Thus such an individual may lose all remembrance of his previous life; he possesses a new ego. In some cases the patient passes through two or more different short periods of life as two or more personalities, and one is not aware of the existence of the other. In another group of cases fragments of one personality are retained by the other: some acts committed during one state may be recalled in an other state. There are consequently cases in which there is no really complete interruption, but rather a continuity of consciousness which is only altered in its power of criticism at various periods. In still another group of cases there is a profound disturbance of general sensibility, and the entire person thus affected speaks of himself in the third person.

The majority of cases of dual personality recorded in the literature are examples of complete loss of normal selfconsciousness upon which normal stimuli have no effect. The characteristic feature of these lies in the fact that the psychomotor sphere is not inhibited in either state. Each personality in its own state acts in response to inner stimulations, and one state has not the remotest association with the other. It may happen that the lives the two personalities are leading are diametrically opposite to each other. As remarkable examples of such a state may be mentioned the case of Mary Reynolds (a case of double consciousness by Weir Mitchell), and the case of Reverend Hanna (multiple personality of Sidis and Goodhart). In the latter, consciousness was so profoundly dissociated that the two personalities he presented before the treatment was instituted, had individual systems of psychic states which carried on their functions in an absolutely independent manner. Striking examples are also described by Prince (1).

With few exceptions all the cases of double or multiple consciousness recorded in the literature present two characteristic features. One is, that at no special time is there a simultaneous coexistence of the two egos; one follows the other or they alternate. In Wilson's case (2) there were as many as twelve personalities; the transition of one to another was gradual or rapid, but only one at a time was in function. The other common feature is that at first there is total amnesia; one personality is unconscious of another; later, with or without treatment the gap separating the dissociated mental states is gradually getting narrower or filling up; some recollection of the past state appears in the mind of the patient in the successive state, so that after a long interval one state becomes aware of the existence of the other and the two egos may finally become synthetized into one personality. This is the usual process in cases of recovery. Those patients who do not recover present during their entire life the alterations mentioned of personalities with complete amnesia of each preceding state. As an exception to the first characteristic feature of double consciousness I may call attention to the case reported by me (3) in which the patient was aware of the fact that his ego was double and he called them number one and number two; they were extremely antagonistic to

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each other and one interfered with the activities of the other. An exception to the second characteristic feature of dissociated mental states is found in the case reported below. Here we find a complete and total inability on the part of the patient to recall a single event or even a fraction of occurrences which took place during an entire year, from October, 1923, to October, 1924. Moreover, some incidents which occurred during that period were of such a character that they aroused the strongest human emotions and continued so for a whole year and still the patient even at present, one and a half years after the return of her normal personality, has not the slightest recollection of them. We have in this case an example of the existence of a different personality during a period of a year with total amnesia of it and with no tendency towards filling the gap. The splitting of the personality occurred in this individual without any history of trauma, of acute infectious diseases, of an organic cerebral lesion and in the absence of any other special etiological factor. While the patient recovered her conscious ego, she has not recovered from her amnesia of facts and of her activities during the amnesic period. In such a case the prognosis is not favorable as it is contrary to the usual experience in cases of amnesia in which recovery occurs. The probabilities are that alterations of the personality will recur in the life of our patient.

Case.—Mrs. R. D. M. was twenty-five years old. She received her education in high school and art school. From seventeen to the age of twenty-one she occupied clerical positions. During that time she became extremely friendly with a young man. At the end of the second year of this warm friendship their relations were broken off. She became depressed, exceedingly nervous, could not sleep and lost interest in everything that formerly appealed to her. Her condition remained unaltered for an entire year. Upon the advice of her physician (Charles Manning) she took a position with short hours of service which she held for a brief period. In 1923 she entered the employ of a bank as a clerk and soon changed for a position in a news bureau which she held for a whole year. In 1924 she married.

It was noticed that within the two years before her marriage her disposition underwent a considerable change. She became domineering, refused to listen to reasoning and considered herself superior to anyone with whom she came in contact, including the members of her family. It was also noticed that during the last year before her marriage, that is from October, 1923, to October, 1924, when she was working in the news bureau she would remain frequently at the office during the evenings and would go to work also on Sundays and on all holidays. She would return home exhausted and go to bed at once. She would get up early, spend over an hour in the bathroom and start off for the office before eight o'clock. When reminded by her parents of the uselessness of doing late and very early work, she would ignore them and repeat the same actions and behavior. She avoided every member of the family and all her friends. The officials of the news bureau often spoke to her of the futility of doing unnecessary work at nights and on holidays, but she apparently did not pay attention to their advice. She was well thought of by the office force; her work was considered highly satisfactory and characterized by extreme precision and accuracy. Her acquaintances and friends, all her relatives were always fond of her because of her charming manners combined with her serious outlook on life, and particularly because of accuracies in her statements, remarks and dealings. She could be relied upon in every respect. She was considered exceptionally truthful. The parents and the officials of the news bureau did not interfere further with her unusual close attention to the work, but they were concerned about her tired appearance, pallor of the face, her poor appetite and progressive loss of weight. She absolutely refused to consult a physician or to relax in her application, claiming that the work must be done. Towards the end of 1924 the news bureau commenced to observe a shortage of money. Investigation at first failed to reveal the cause of it. Suspicion fell on our patient. It was shown that the sum of about two thousand dollars was missing. The parents were approached on the subject and while there was no direct proof, nevertheless they were threatened with arrest of their daughter. The patient was discharged. At that time her physical condition was extremely poor and for this reason her physician counselled not to question her on the shortage of money. Every effort was made by the parents to avoid publicity. At that time she met with an accident and fell, being considerably confused and frightened. She became exceedingly nervous, developed obstinate insomnia, would cry without provocation. The parents decided then to interrogate her on the shortage of money. She was unusually surprised at this revelation and became much depressed and was worried. She said she knew nothing of this occurrence. Moreover, she never heard of the news bureau and of her being employed there. All she recalled was that she worked last in a bank, but when told that she left the bank in October, 1923, and that she was employed by the news bureau from October, 1923, to October, 1924, she became perplexed. All the incidents concerning the character of her work and the extraordinary assiduity by working every day until late at night were pointed out to her. She showed considerable amazement. She showed special distress when told that she was accused of having appropriated money belonging to the news bureau. She could not believe that the accusation was genuine especially in view of her scrupulous honesty. She never knew of the existence of the news bureau and was particularly disturbed when told that she had been employed there a whole year. She had no knowledge of working there and of having done extra nights' and holidays' work. She had no recollection of the warning of her parents and of the officials against overwork. She was extraordinarily amazed and astounded when she was told of being married. She did not remember having seen the minister who married her; she did not recall having obtained a marriage license nor having roomed with her husband.

At present she knows nothing that occurred during the year from October, 1923, to 1924. It is only since the accident of the fall that she commenced to realize that there was a lapse of an entire year in her life and that she presented a different personality during that time. When questioned with regard to her married life it was singular to observe that she had no

knowledge whatsoever of the most emotional incidents connected with it. She remarked that soon after the accident she woke up in the morning and was painfully surprised to find a man in her bed. Indignantly she ordered him to leave; but when the situation was explained to her she broke down and cried. She knew the man for several years as a friend of the family, but she had no knowledge of having cohabited with him during an entire year.

A repeated examination made six months later reveals the same amnesia of one year's duration. She still cannot recall a single incident in her life during that period. No surprise questions nor the free association method could be of any assistance in this direction. She disclaims all knowledge of the amnesic year. She is much distressed over her inability to recall a single event, neither with regard to her employment, nor to her having lived with a man without knowing it. She became frequently depressed and was exceedingly anxious for medical assistance in order to bring back to her memory all that happened. She was perfectly lucid at time of examination, she showed no trace of mental disorder, she was free from delusions or hallucinations. Her judgment was excellent. Somatically she presented evidences of an exophthalmic goitre. A careful examination failed to reveal hysterical stigmata. While intellectually she could be considered normal, in the emotional sphere there were some abnormalities: she was indifferent; not easily aroused. She was honorable and devoted to her husband, but took no special interest in him, in his affairs, in his attention to her. Sexually she was totally indifferent, finding no response to her husband's advances or caresses. No man or woman could stimulate her by their friendship; she did not pay the least attention; she was not particularly aroused by gaining or losing a friend. No event of a striking nature stimulated her greatly as far as amusements were concerned. She liked to see good plays, but she never became enthusiastic over them.

The affection lavished on her by her parents was received with a great deal of indifference; gifts of the most delicate character presented to her were accepted with a pleasant smile but there was no enthusiasm. She treated her friends indifferently, apathetically. Although her personal appearance showed the most elaborate care in the details and she dressed in the latest fashion, nevertheless her attitude towards it was total indifference; there was a lack of voluntary personal element; it was evident that her actions were automatic. She was well posted on the events of the day, national and international, but there was no real or deep interest in the outcome of important occurrence affecting her country. She claimed being attached to her parents, but was eager in conversation to emphasize their faults and shortcomings. When one of her parents was ill, the little attention given by her was utterly lacking wholeheartedness and genuine sympathy. Her previous medical history presented nothing worth while as far as somatic diseases were concerned. No detailed account could be obtained from the parents concerning her emotional life or characteristics except the multiple controversies with her father and a sense of superiority that she always exhibited in dealing with her school friends and her relatives. Her viscera were normal. All biological tests proved negative.

In an attempt to analyze the occurrence of the amnesic period, otherwise speaking to understand the why of a whole year's flight from realities of life, one must bear in mind the patient's domestic situation, her relationship to her parents, her opinion of them and her general comportment and attitude, finally the incidents in her life. One recalls her constant controversies with her father, with whom she always had disagreements and misunderstandings, her sense of superior ability and knowledge, the belief that she did not have to be corrected or advised, her constant tendency to object and even to rebel. Evidently the patient's life was difficult, if not intolerable, because of the conflict between the desire for selfexpression and the sense of duty towards the parents. The emotional shock that she sustained in having been rejected by her suitor psychologically interpreted means unfulfilled wish; it has undoubtedly added a new element of dissatisfaction and intensified the intolerable situation. It is then not at all difficult to appreciate the patient's rebellion against the conditions imposed by ideals of duty. In spite of the latter, the ardent craving to get away from the intolerable situation was ever present. Up to the period of the amnesia she was living in a state of intense repression, but the protest and rebellion remained just as intense because of lack of a legitimate outlet.

The history of the patient's life since childhood shows that she belongs to the category of psychoneurotics. The amnesia which had developed is merely the expression of a neurotic mechanism set in motion for the purpose of carrying out the urge of the subconscious forces. Instead of a physical selfexpression, the protests and the rebellion found expression in an amnesic state during which the patient led the life of a personality which was real and desirable to her. For reasons that could not be overcome the patient is presently compelled to continue living with her parents. It means that she is compelled to meet the same difficulties and her intolerable situation, the potentialities of which remain unaltered. The renewed rebellion and the repressed protests do not find satisfaction. If she continues to be sorely tried she may again become amnesic.

Psychoneurotic individuals are highly suggestible, highly sensitive and highly emotional. While they do not present new phenomena which are not observed in normal individuals, their reaction, however, to all kinds of stimuli is expressed in a greater intensity and is reproduced with a greater facility and branches out in a most unexpected manner. The complex psychological states which are due to conflicts between instinctive emotional elements and environmental occurrences and which are being created daily and hourly in every human being, are in psychoneurotic individuals more numerous and more intense. Bearing this in mind the management of such individuals must have for purpose not only their adaptation to the environment but also to themselves. They must be shown how to unravel and lay bare the elements of the complex psychological states which are in constant conflict so that to fit them to face themselves. Our patient must be shown how to gain a better insight into her personal problems. It is only after this task has been accomplished that she will face her environment and not find relief from an intolerable situation by an attack of amnesia.

What Can Be Done to Reduce the Mortality from Carcinoma of the Rectum

ARTHUR A. LANDSMAN, M.D.

New York

While we cannot hope to conquer cancer until its cause has been discovered, much may be done to relieve symptoms, prolong life and even diminish the number of deaths from it, if we make intelligent use of the knowledge we already possess. All means at our command need to be enlisted to combat the disease, for it is a community problem which costs many lives, brings much misery and carries in its wake widespread suffering, not only to the afflicted but to friends and dependents. Despite specious reasoning and ingenious juggling of figures, the truth remains that cancer has been steadily on the increase in civilized races; this is borne out by the mortality tables of life insurance companies (1), reports of the United States Public Health Service (2), and extensive experience among private practitioners in various parts of the country.

Over one hundred thousand persons died of cancer in this country alone in 1921, and what is more significant, the death rate has shown an upward trend in the last twenty years despite a substantial decline from other diseases (3). It is given on reliable authority that forty per cent. of all cancers are found in the intestinal tract, of which five per cent. occur in the rectum (4), and as that organ is accessible to direct examination it is disconcerting to find that a large proportion of cases are only discovered when they are too far advanced for effective treatment (5).

It is hard to reconcile this with the progress which has been made in medicine in the past twenty years or more, and we are persuaded that the blame does not rest entirely with the medical profession, but that the public contributes to it in no small measure because of its ignorance of medical matters and its general lack of interest in public health problems.

It is safe to assert that a majority of people have little accurate knowledge of cancer and when they are individually concerned will often drift along until matters are brought to an acute stage; the thought of a medical examination brings up to them visions of pain, expense, loss of time from business, to which we may add the natural reluctance of some people to submit to a rectal examination. It is difficult to induce them to consent to it unless for the relief of some urgent symptoms which are generally absent in early stages of rectal carcinoma; a growth in that area may be well advanced before it will produce disturbances for which a person may consider it necessary to see his physician.

The remedy is clearly education of the public in the nature of intestinal cancer and the dangerous consequences of neglect and delay; it is only on this basis that we can make a successful appeal to reason. A campaign of this kind should be carried on in a suitable manner through newspapers, broadcasting by radio, posters and announcements by which large numbers may be reached, and on a smaller scale, through welfare and social health agencies which enjoy the confidence of the public.

But this will not suffice unless we are then prepared to see to it that the patient should receive the best skill and care which can be given him. That this does not necessarily follow becomes apparent on looking over the literature. We quote from a well known worker in the field: "The responsibility is not limited to the laity. . . . there is distinct evidence of procrastination and lack of complete examination by the physicians who were consulted first. This is particularly true of rectal examinations" (6). Again and again we find that people have been treated for bleeding piles in whom unmistakable signs of malignancy must have existed for some time. Cases are on record in which patients have been under observation during a considerable period for chronic constipation when a sigmoidoscopic examination would have shown at once that the visible portion of the intestine was obstructed by a malignant growth. It is by no means rare to find that a person who has been repeatedly x rayed to determine the cause of chronic indigestion has a neoplasm of the bowel within reach of the finger. Until we shall be prepared to make more frequent and more skilful rectal examinations, at least in people who have suggestive symptoms, we are in danger of overlooking a certain proportion of such cases and allowing them to advance into the hopeless class. The remedy is not only education of the public but a better understanding of the subject of cancer control and prevention on the part of those who guard the public health.

We venture to suggest constructive criticism along the following lines:

1. Improved facilities in the teaching of proctology. Those who are responsible for the medical education of the future physician should see to it that he starts with a fundamental knowledge of rectal disorders. It is not fair to expect that this be picked up unaided, nor should postgraduate instruction take the place of elementary training. All medical students ought to be given an opportunity to enable them to recognize the more common rectal affections, be taught the importance of proctoscopic examinations and the proper use of rectal instruments.

2. Establishment of rectal clinics in connection with all dispensaries and hospitals. It would seem that it is unnecessary at this late date to present arguments in favor of a proposition so plainly in the interest of public health and the advancement of medical science. But while many progressive hospitals both here and abroad have long maintained such special clinics, there are others who, because of their traditional conservatism, hesitate to take any step forward which is a departure from the order of the day. Experience has proved that the greatest progress in any branch of medical science comes with better opportunity for intensive study of special problems; such methods would stimulate the study of rectal disturbances, develop well trained men and encourage research along original lines.

3. Routine proctoscopic examination of all persons approaching middle life. Because of the slow and insidious growth of rectal cancers and their lack of early definite symptoms, it is impossible to make a diagnosis of some cases of carcinoma of the lower bowel unless patients can be seen in the preclinical stage. It goes without saying that if all persons of middle age could be induced to submit to a rectoscopic examination (which is simple and painless), many lives could be saved by timely surgical intervention.

4. Removal of precancerous lesions. It has long been known that benign tumors, ulcerations, chronic eczematous conditions, long standing piles, cutaneous tags, tracks of old fistulæ and other lesions about the anus and rectum have a tendency to undergo malignant change when subjected to chronic irritation and workers in this field have been able to produce carcinoma in laboratory animals by the use of certain irritant agents (7). It would thus seem that in the removal of such lesions it would be possible to prevent the development of cancer of this type, and here is the key to one of the most important methods of cancer cure—to treat the cancer before it develops. If we can awaken the public to the potential danger which lurks in the neglect of long standing rectal troubles, we shall be able to save the lives of many persons who are otherwise doomed to suffering and early death.

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545 WEST END AVENUE.

Treatment of Cancer of the Rectum

CHARLES J. DRUECK, M.D.
Chicago

Cancer of the rectum below the level of the pelvic brim and above two inches from the anus is best removed by a combined abdominal and perineal operation as first performed by Czerny in 1884. Various modifications of the original technic have been described because our method of approach cannot be constant, but depends rather upon the extent of the disease, the involvement of other structures and organs, the patient's age, sex and physical condition. Sometimes it is possible to bring the proximal gut down through the sphincter and attach it to the skin, thus preserving the anus in its normal location, but such a procedure leads to the danger of leaving *in situ* intestine or lymphatics which contain particles of malignant disease.

In all cases where the rectal ampulla is involved an exploratory abdominal section should be made through a liberal median incision.

Where cancer is limited to the colon or movable sigmoid and is entirely surrounded by peritoneum it may be lifted out of the abdominal wound. This operation is quickly performed and causes no great mutilation of the tissues. But where the growth extends below the promontory of the sacrum (the rectosigmoid junction), and is but partially covered with peritoneum, a complete removal through an abdominal incision is attended with many difficulties and mishaps and the combined abdominal perineal operation is unquestionably the best. It permits a careful examination of the liver and the lymphatics for metastasis and by closely noting the extent of involvement of the rectum and contiguous organs determines definitely whether continuity of the bowel to the anal region may be maintained or whether a permanent anus shall be provided. This operation offers the patient the best chance of ultimate recovery and freedom from recurrence. With perineal methods, even after the most complete and extensive removal possible, whereby recurrence in the immediate vicinity is reduced, nevertheless, new growths appear in situations beyond the scope of removal via the perineum. Postmortem examinations show that these recurrences are, 1, in the pelvic peritoneum; 2, the pelvic mesocolon; and 3, the lymph nodes situated over the bifurcation of the left common iliac artery. In all cases the infiltration of the parietal border of the pelvic mesocolon causes shrinkage of the pelvic mesocolon itself, whereby the pelvic colon appears to be bound down, a condition which readily explains the difficulty in obtaining a satisfactory spur when performing colostomy in an advanced case of cancer of the rectum.

From these observations it is obvious that the above mentioned structures constitute the zone of the upward spread of cancer from the rectum, the removal of which is just as imperative as is the thorough clearance of the axilla in cases of cancer of the breast if freedom from recurrence is to be hoped for.

The study of the spread of cancer from the rectum has led me to formulate certain essentials in the technic of the operation which must be strictly adhered to if satisfactory results are to be obtained, namely:

1. That an abdominal anus is necessary.

2. That the whole pelvic colon, with the exception of the part from which the colostomy is made, must be removed because its blood supply is contained in the zone of upward spread.

3. That the whole of the pelvic mesocolon below the point where it crosses the common iliac artery, together with a strip of peritoneum at least an inch wide on either side of it, must be cleared away.

4. That the group of lymph nodes situated over the bifurcation of the common iliac artery are in all instances to be removed.

5. That the peritoneal portion of the operation should be carried out as widely as possible so that the lateral and downward zones of spread may be effectively extirpated.

In operating for cancer it is important not only to remove the local tumor and such adjacent tissue as might possibly be affected, but also to remove as much as possible of the tributary lymph nodes. To do this necessitates the removal of the whole rectum, together with so much destruction of muscle and nerve tissue that a controllable anus is impossible, and an abdominal colostomy will usually give better results at less risk. Fagge (1) says the entire anal canal should be removed when the carcinoma has its origin in the rectal ampulla. Mayo (2) advises the removal of at least six inches of apparent sound bowel above and not less than two inches below the growth with all the surrounding fat and glands.

Excision of the rectum is one of the most formidable operations in surgery, entailing, as it does, the removal of practically the whole of the pelvic colon as well as the rectum, and a word regarding the practical anatomy will not be amiss. The pelvic portion of the sigmoid is about sixteen inches long and extends from the edge of the psoas muscle to the level of the third sacral vertebra. It makes a horseshoe shaped loop and has a mesentery one and a quarter to three and a half inches long. The length of the loop and also its mesentery is quite variable.

If colostomy is performed as a primary operation, to be followed later by radical removal of the diseased tissue, it allows thorough evacuation of the bowels and careful cleansing of the distal gut before doing the second operation.

Beginning two days before the operation our patient is given the usual preparation for a laparotomy. When he is anesthetized, the rectum is irrigated with formalin or bichloride solution followed with full strength peroxide of hydrogen.

The patient is placed in the Trendelenberg position and the abdomen is opened with a four inch incision in the median line. A liberal opening is necessary to allow working space. The small intestines are thoroughly packed back to facilitate a clear view of the lower sigmoid and rectum as well as to prevent unnecessary handling and encroachment of other parts of the intestines. The patient is then turned to the horizontal and the sigmoid is lifted out of the wound and held taught, thus bringing the sigmoid artery prominently into view. The peritoneal covering of the mesosigmoid is slit open close to the gut about two inches above the growth, and with a pair of blunt pointed scissors the incision is continued along about half an inch from the margin of the gut, thus separating the peritoneal wall from the vessels. This dissection is continued from the sigmoid back to the peritoneal flexion on the posterior abdominal wall and the ileum. The bowel is then laid over on the other side and the peritoneum similarly elevated on that side. The sigmoid artery is traced to its origin in the superior hemorrhoidal artery and just above this junction the superior hemorrhoidal artery is tied with two ligatures and cut between.

The superior hemorrhoidal artery is next tied in two places and cut between the ligatures. Care should be taken not to injure the middle sacral artery; by saving it the operation is almost bloodless.

In the female the left broad ligament should be detached together with the left ovary and tube. This having been done, the pelvic mesocolon, together with the adjacent strip of peritoneum on either side of it, is detached from the hollow of the sacrum as far down as the levator ani muscle. By keeping close to the anterior sacral ligaments, the cellular tissue containing the lymph nodes in that situation is detached with the pelvic mesocolon in one piece. This separation is continued downwards in the middle line as far as the sacrococcygeal articulation.

The sacral wound is now filled with gauze while a similar method of blunt dissection is carried out anteriorly by which means the bladder is detached as far as the prostate gland. Attention is now paid to the separation of the lateral aspects of the rectum and it is here that great care must be exercised to avoid injuring the left ureter which adheres closely to the peritoneum as it skirts the wall of the pelvis. When the ureter has been defined it should be carefully freed as far as the base of the bladder. On the right side the ureter need not be seen. The dissection is then carried downwards on either side and the lateral ligaments of the rectum are divided with scissors. In these structures the middle hemorrhoidal arteries are found, but seldom require a ligature. This lateral dissection is carried down to the upper surface of the levator ani. When the rectum has thus been freed on all sides as far as the points indicated, the bowel having been widely loosened should easily reach the normal anus without tension. If it does not do so the operator determines whether it is held by the mesosigmoid or by the bloodvessels. If the mesosigmoid needs further loosening it should be incised. The blood supply is next examined to be sure it is sufficient before proceeding. Arterial capillary pulsation must be felt in the parts. At the rectosigmoid junction is a portion of the bowel sparingly supplied with end branches. The lower sigmoid arteries supply from above, and from this point down the bowel is supplied by the superior hemorrhoidal, but these two arterial systems do not anastomose. If the superior hemorrhoidal is cut above its distribution to the rectum the lower end of the gut will not have sufficient blood supply and will slough, thus causing infection and death. This is a pertinent question in every case of cancer above the level of the floor of Douglas's pouch. When satisfied that the divided bowel will reach the anus with good blood supply the abdomen is well protected with pads, the bowel is divided with a cautery and the bowel ends closed with Lembert sutures. The rectum is now separated from the lateral ligaments and the whole of the detached structures are crowded down into the pelvis and covered with sterile gauze. Provided that the divided end of the colon has been firmly closed, considerable pressure may be made upon it from above without fear of leakage. The edges of the pelvic floor, and the abdominal incision are closed. The patient is then placed in the exaggerated lithotomy position and the detached mass is extirpated through the peritoneal route as has been described under cancer at the anus. The proximal end of the gut is brought out at the perineal wound.

If the proximal end of the bowel cannot be brought down to the anus it may be brought out of the abdominal incision as has been described in considering colostomy.

When the cancer is situated high in the sigmoid the continuity of the lumen of the gut by end to end anastomosis or lateral anastomosis has been followed by a very high mortality due to leakage.

In many cases rectal examination cannot determine whether or not the disease may be locally removable and an intraperitoneal exploration should be the first step of the operation.

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Idiopathic Paralysis Agitans*

Report of a Case in a Man Thirty-Five Years Old

THEODORE C. FONG, M.D.
Washington, D. C.

(Concluded from Vol. CXXIII, No. 12, Page 803)

Freeman (17) of this institution reports, in his paper on the pathology of paralysis agitans, that in the two patients who died pathological examination of the brain revealed changes most marked in the substantia nigra. These changes consisted of degeneration of the ganglion cells with loss of pigment and replacement of glial tissue and a deposit of fat. There were moderate arteriosclerotic changes in the idiopathic case, but only minimal lesions in other areas of the brain in the case following encephalitis. There was also some inflammatory reaction about the mesencephalon in the latter case.

Therapy.—The treatment of paralysis agitans is practically entirely symptomatic, and very little, if any, has been added to its therapeutics since the first description of the disease. Parathyroid (18) was formerly employed, but has been discarded; Lundborg believed that this condition was due to hyposecretion of the parathyroids and therefore advocated its employment. Various drugs have been used with little or no relief. Those mainly employed are arsenic (19) in its various medicinal forms, drugs of the belladonna group, especially hyoscine (20 and 21), as antispasmodics, also analgesics and hypnotics. Hydrotherapy in the form of warm baths are somewhat beneficial in some cases. Electricity has also been used with practically no good results. The greatest relief from rigidity comes from the regular employment of passive movements. In closing, we must not forget that regulation of diet, rest, quiet, fresh air and sunlight aid in the treatment and we should note that excitement and fatigue should be carefully avoided.

REPORT OF CASE

Case.—J. P. M., a white male, single, aged thirty-five. He was admitted to this institution on April 18, 1923. He was transferred here from the United States Veterans Hospital No. 49 at Philadelphia. The transfer note which accompanied this patient states that he is quiet, causing no trouble; sits all day in the same place in the ward, pleasant and agreeable; shows no interest in any work, has parole, laughs much of the time in a rather silly manner.

Report from the director of the Red Cross service, Veterans Hospital No. 49: This man was usually very dull and sullen in appearance and behavior. He always said, however, that he was happy although his looks would never indicate this. He was hypoactive, content to lie around on benches and never could be interested in doing any work. He was very untidy in appearance and especially so in taking his meals. He had parole of the grounds which he never abused and he occasionally came to the Red Cross building for entertainments. He was never overly interested in these, however, and always looked rather bored.

The following history and physical findings were made at this hospital: The chief complaint was rheumatism. The family history was essentially negative. The patient was by occupation a truck handler, for a grocery concern, and he had worked steadily at this job for eight years except during the period of his service in the army, which was from July, 1918, to June, 1919. He was never overseas. With the exception of measles, mumps, chickenpox, whooping cough and diphtheria in childhood, no history of any acute or chronic illnesses could be obtained and particular care was taken to eliminate influenza and encephalitis as possible etiological factors. The only injury was a fracture of the nasal bones fifteen years ago.

About six months following his discharge from the service he states that rheumatism first appeared. In the interval between his discharge and his present illness he had returned to his former occupation of loading grocery trucks. He asserts that these pains came on rather suddenly and first became evident in his knees and later in both arms. Due to the pain and stiffness in his knees he was unable to get around very well and was later forced to give up his occupation. This pain remained more or less localized over his knees, but the pain in his arms involved the entire upper extremities and was quite sharp in character. His knees were swollen but not inflamed. He was treated at four hospitals prior to his admission to this institution. All this time he asserted that he had no tremor of any part of his body, and it was not until his transfer here that he noticed that he was becoming unsteady and that he had a jerky motion in his right hand which he was unable to control. This jerky motion he stated had gradually become more marked since his admission so that at the time

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of examination he was unable to feed himself without spilling food about him. His rheumatic pains which were still quite marked on admission have entirely disappeared without treatment. He was admitted to the hospital building on February 17, 1925, for treatment of burns of both buttocks and, while on the surgical service an incidental diagnosis of idiopathic paralysis agitans was made. Prior to this time the case had been diagnosed as dementia precox (catatonic type).

Physical examination.—An adult white male, aged thirty-five, height five feet five and a half inches and weighing about 155 pounds, in bed in dorsal position with knees flexed and arms held over abdomen, elbows flexed, wrists extended and fingers flexed at metacarpal phalangeal articulations, the thumbs being held in opposition to the index finger. The lids were partly closed at times, the mouth was held opened and the facial expression was blank. The patient cooperated with the examiner, answered questions intelligently and coherently, had no delusions or hallucinations. He had slight retardation in responding promptly to questions, but after once initiating speech it became more free, but was rather monotonous in type. He exhibited some difficulty in sitting up from the reclining posture and he did not employ his hands in aiding himself to get out of bed, but rather pulled himself out. These motions were not free and easily done but appeared to be performed with some difficulty. When he walked his head was tilted forwards, his neck was held rather rigidly together with the muscles of his shoulder and spine and he was inclined to tilt his trunk forward and his knees were slightly flexed. Occasionally he tended to exhibit retropulsion. Skull and scalp were negative with the exception of a small scar over vertex of scalp.

The facial expression was masklike and stolid. The voluntary movements of the facial muscles were slightly more marked on the left side. The skin and sensation were negative except for slight acne and a moderate degree of hyperidrosis. The eyes had a vacant stare. The ocular movements and vision were normal. The pupils were unequal and slightly irregular, the left being larger than the right. Both were centrally placed and both reacted well to light and accommodation. The ears were negative. There was rather marked deformity of the nose resulting from an old unreduced fracture. The nasal septum was deviated to the left and there was a perforation most probably traumatic in origin in its lower anterior portion. The right nostril was larger than the left and within the right nasal cavity there was some ulceration and crust formation which was due to continual picking of it. The mouth was negative. The teeth were in good condition. The tongue protruded in the midline and there was a slight tremor. The pharynx was not injected and there was no apparent difficulty in deglutition. There was no speech defect but some hesitancy. The neck was held rather rigidly but was otherwise negative. The thorax was slightly asymmetrical, the right side of the chest being more prominent, the expansion was equal and there was a deep funnel shaped depression of the lower end of the sternum. The cardiovascular system was negative. Blood pressure 116-76. The lungs were negative. The abdomen and external genitalia were also negative. There was some tendency to muscular rigidity most marked in the muscles of the face, neck and back. There was no atrophy or paralyses. The socalled cog wheel phenomenon was present and appeared to be more marked on the right. The hand grips were good. There was an involuntary intermittent tremor involving the right hand, wrist and forearm which varied in intensity. At times it became more marked. It disappeared when the patient was sleeping and could not be controlled when awake. The hands were held in the pill rolling fashion, with the wrist slightly extended and the fingers flexed at the metacarpal phalangeal articulations, the thumbs opposing the index fingers. There were no tremors present in the other extremities. The knee jerks were exaggerated and this appeared to vary at times. The biceps and triceps were somewhat increased. The Achilles reflexes were hyperactive. The superficial reflexes were also increased. There was a suggestive bilateral ankle clonus. No other abnormal reflexes were present. The gait was not festinating in type, but was rather slow. The coordination tests were fairly well performed. The cranial nerve examination was negative. Sphincter control was normal. The laboratory findings: Eight blood Wassermanns were made, the third of these being weakly positive; the balance were negative. Three cerebrospinal fluid examinations were normal. The blood count and urinalysis were normal.

SUMMARY

This is a case of idiopathic paralysis agitans occurring in a white male of thirty-five who presents practically all of the cardinal symptoms and signs, and in whom no etiology for the disease can be definitely established. This case is being reported inasmuch as it is rather rare to see this disease occurring before the fifth decade of life.

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Practical Therapeutics

Modus Operandi of Therapeutic Agents in the Treatment of Infections

JAMES W. WILTSIE, M.D.

Binghamton, New York

The general trend of thought regarding the modus operandi of therapeutic agents in infections is changing rapidly these days as we come to a better understanding of the physicochemical reactions in the body in health and disease and are able to study these reactions more accurately by improved methods and technic. The old idea was that drugs acted directly in destroying the infecting organism in the body, the unattained ideal being a drug which at one and the same time would destroy the invader and be harmless to the host. Today this ideal has been practically abandoned as the result of research work which shows that no drug remains in the blood stream in sufficient concentration to be bactericidal for more than a few seconds. It would appear that Nature resents these foreign bactericidal agents as much as she does the living organisms, and alters and eliminates them as rapidly as possible.

Nature's method of attack upon parasitic organisms is not by means of chemical agents, which might damage her own structures as well as those of the invader, but by a slower, more complicated and much surer method of warfare—the establishment of immunity. Any value, therefore, which may be attached to therapeutic agents in combating infection must be conceived to be the result of stimulation or aid in some other way of Nature's own defensive mechanisms, leucocytosis and antibody formation.

Benefit accruing from the use of dyes, salts, synthetic chemicals, colloids and vaccines, administered by mouth, subcutaneously, intramuscularly or intravenously, diathermy, radiation, counterirritation, hydrotherapy and massage, might all be the result in whole or in part of a specific or nonspecific immunity development. There is a disturbance of the *status quo* in the diseased tissues for the healing of which the treatment was applied, and we must assume that antigens are released, that complex molecules are broken down, and that as a result of this, antibody formation and leucocytosis are initiated.

What, then, should determine our choice of agent in any given condition, if there is any choice, and what should determine our method of application. The differences in reaction to these various agents variously applied are differences in degree only. We should be guided in our choice of agent and method of use by the following factors: safety, degree of reaction anticipated, relative trauma induced, degree of direct approach to the causative agent, and relative specificity.

The special circumstances surrounding certain cases obviously ideal for certain types of treatment are selfevident and require no defense as compared with other methods of eradication, e. g., surgical removal of diseased tissues. Direct approach rules here, and the trauma induced is insignificant in comparison with the benefit to be derived from this procedure.

Several therapeutic agents equally effective presenting themselves, we would naturally choose the one known to produce the minimum amount of reaction. Likewise in considering methods or agents of equal therapeutic value we would select the one producing the least degree of trauma.

As to the degree of direct approach to the causative agent, the nature of the infection, the nature of the agent to be used, and limiting factors inherent in the patient himself, will frequently automatically guide us in our choice. But when it is possible to choose, the order of preference would certainly be, direct application of the agent to the focus of infection, the intravenous route, intramuscular injection, subcutaneous injection and ingestion.

As to relative specificity of agents or methods we enter a more complicated field. We know that quinine shows a greater relative specificity for malaria than any other agent with which we are acquainted. Mercury, arsenic, bismuth and iodides seem to have a greater relative specificity for syphilis than other drugs.

In infections, with which this paper deals, eradication or cure by whatever means is the desired result. If the source of the infection is known, surgical removal or drainage may be possible. If the infection has existed so long that secondary foci exist, eradication of the original source *per se* is ineffectual. There are frequently cases, manifestly systemic infections, in which all attempts to locate the primary focus fail. In these cases our efforts should be to aid Nature in establishing an adequate immunity against the causal organism. Frequently, however, this organism cannot be identified. Any means therefore that we might have at our disposal of creating a specific or nonspecific resistance would be highly desirable, and if in so doing the foci of infection should become manifest it would be still more gratifying.

Nonspecific resistance has been accomplished by intramuscular and intravenous injections of various therapeutic agents. Intramuscular injections as a rule cause pain and trauma. The products of the local reaction probably act as antigens, toxins and endotoxins of the organism producing the systemic infection for which these treatments are given being present, undoubtedly exert some effect in producing specific antigens. Whatever may take place some immunity is developed and the patient improves. However, we may get a very unpleasant protein shock reaction as the result of the toxic nature of the products of the reaction. This protein shock reaction may also occur when certain substances are used intravenously in an attempt at nonspecific immunity development. Shock reaction is not necessary to the establishment of immunity and if possible should be avoided.

As a result of my observations while using sodium iodide intravenously in infections and allergies I have

come to the conclusion that sodium iodide acts as an antigen liberator, that ambocepter elaboration is thereby stimulated, that a complement fixation reaction occurs and that leucocytosis is thereby called forth, i. e., that the active presence of complement fixation stimulates leucocytosis and that the leucocytosis exists for the purpose of ingesting the end products of the complement fixation reaction as well as for combating the living bacteria. It might easily be conceived that these leucocytes as the result of having been called into being by specific complement fixation would themselves be specific against the causal organisms, and having ingested the end products of complement fixation would themselves possess an immunity against these organisms. Certain it is that an eosinophilia or a lymphocytosis called forth by certain types of infections suggest specificity.

My conclusions differ from those of other observers in that I believe leucocytosis is always secondary to and dependent upon the active presence of the complement fixation reaction—the evidence of immunity establishment. They, however, believe that leucocytosis precedes and has a causal relationship to the establishment of immunity. Nevertheless, we know that immunity exists independent of leucocytosis, and that leucocytosis is present only when immunity is actively at work as evidenced by the active presence of complement fixation.

Furthermore, during an acute allergic manifestation there exists a leucocytosis, as evidence of active complement fixation. We may consider this as an immunity reaction. Sodium iodide administered intravenously relieves the acute manifestation and the leucocytosis at once disappears. The antigen is still present, but the antibody formation has ceased as a result of desensitization. Therefore complement fixation ceases and the stimulation of a leucocytosis is lacking and our leucocyte count returns to normal.

Compared with the protein shock method of immunity establishment, with the intravenous use of dyes or antiseptics or with intramuscular injections of mercury salicylate, sodium iodide, by virtue of its powers of resolution, mild stimulation and lack of undue irritation produces a purer, more nearly specific antigen liberation than these other substances. Sodium iodide intravenously rarely produces a severe reaction, frequently barely perceptible, and yet immunity is established. The iodide in some way appears to alter the toxic end products to render them less toxic. For this reason alone sodium iodide should be the choice of agents when indicated. Being given intravenously the method also is that of the greatest degree of approach and least trauma.

However, sodium iodide does have certain limitations and definite indications which it is very important to observe. These limitations and indications are dependent upon the known therapeutic actions of iodides in the body. Primarily these are but two, namely, stimulation of all living protoplasm, and the promotion of a lysis and disintegration of all dead and dying protoplasm and all pathological exudates.

It may be appreciated that in acute infections and in septicemia sodium iodide would be contraindicated as it would interfere with Nature's attempt at localization. Furthermore amboceptor elaboration is stimulated to functional capacity by most acute processes, and any further stimulation might result in exhaustion. Some agent having a more pronounced bactericidal action and less power of resolution would be better here, possibly mercurochrome 220. Manifestly sodium iodide would be harmful in tuberculosis, as Nature's attempt here is to wall off the lesions and encapsulate them. Sodium iodide would destroy this wall and produce a local reaction which would merely result in extension of the lesion. The immunity reaction would be valueless as it is very difficult to establish an immunity against tuberculosis.

Sodium iodide should never be used following operative procedures, first, because it would produce a resolution of the lymph and exudates very necessary to primary union of tissues, and secondly, because of the danger of loosening a blood clot and producing embolism. For this same reason it should never be used in phlebitis.

Sodium iodide should not be used in massive infections even though chronic, as resolution takes place so rapidly that the blood stream is flooded with poisons and the patient is rendered seriously toxic. Under such circumstances immunity cannot develop as the severe toxemia seems to paralyze the defensive mechanism. This is apparent by leucocytosis failing to develop, or actual decrease of an existing leucocytosis.

The legitimate field for the use of sodium iodide in infections, therefore, narrows down to chronic and focal infections, systemic infections exhibiting a leucopenia as evidence of inadequate defense, and to diagnosis in obscure infections. In this field it is undoubtedly the agent of choice and the intravenous route the method of choice. We have the most direct approach, slight reaction, no trauma, an agent as nearly specific as it is possible to find, and, withal, a perfectly safe procedure. Indeed, in the amounts and concentrations given, sodium iodide in itself is nontoxic, moderately and generally stimulating, and whatever unfavorable reactions or accidents may have resulted from its use can safely be said not to have been as a result of the iodide or its method of administration, but from some fault in the technic of administration or disregard of its contraindications.

Sodium iodide is of undoubted value in locating focal infections when obscure. The release of antigens stimulates a complement fixation reaction and a leucocytosis which in turn react upon the focus of infection, producing tenderness, and simulating a local vaccine reaction. A general reaction also occurs. This trio of increased leucocytosis, local reaction and general reaction are usually all present. One or several injections of sodium iodide at two or three day intervals may be necessary for a diagnosis. Pain is frequently experienced if pus is confined, as in an apical abscess or an appendix. Soreness or tenderness occurs if the infection is not confined, as in tonsils or pyorrhea.

An acute appendicitis may develop as the result of breaking down lymph and leucocytic barriers surrounding a chronically infected appendix, thereby allowing the infection to extend. In these cases pain and rigidity may be absent, as the iodide absorbs the exudate in the tissues which as a rule produce the pain by increasing tension. Tenderness, vomiting and increased leucocytosis, however, are usually all present.

Sore tonsils and tender tonsillar lymph nodes would be diagnostic of chronically infected tonsils. A scratchy soreness in the pharynx would not indicate chronic tonsillitis as this sensation is a common symptom of iodism.

Although its physiological actions in the body are primarily the same whether given by mouth or intravenously, nevertheless intravenously it exhibits certain phenomena dependent upon its sudden accession into the blood stream which are never seen when given by mouth, so that in this respect it assumes the proportions of an entirely new therapeutic agent. Its action in promoting immunity is dependent upon its intravenous use, also its value in producing local and general reactions and sudden increase in leucocytosis. Its immediate effect upon allergies is also dependent upon the intensive action when used intravenously. Its stimulation of glandular activity is more pronounced when used intravenously.

Intramuscular or subcutaneous injection of any drug would not be as valuable a diagnostic agent as one intravenously administered, first because the local reaction at the place of injection would overshadow that at the focus of infection, and the antigens produced would be nonspecific—being those of the inflammatory products of the local trauma and not the liberated proteins from the focus of infection. Other drugs than sodium iodide intravenously, not acting so much as a solvent of existing exudates as an irritant producing nonspecific antigens, would produce a more powerful general reaction and at the same time a less marked local reaction at the focus of infection, thus obscuring the diagnosis.

When used intravenously symptoms of iodism, such as salivation, coryza, sore throat, and increased glandular activity, may occur after the first or second injection, but rarely after the third or subsequent injections. This may be due to acquired tolerance, desensitization, or the clearing of the tissues of metabolites. A reaction occurring after the first or second injection, no matter how severe, rarely influences me to discontinue treatment unless one of the previously mentioned contraindications are recognized.

In one case I observed a marked stimulation of the pituitary gland in a patient evidently possessing a tendency to hyperpituitarism. Several hours following the injection there occurred severe diarrhea, severe uterine cramps, and a tenesmus which enemas of sodium bicarbonate solution did not relieve, and was finally controlled only with codeine. Complete physical exhaustion followed. Two days later with considerable difficulty I induced this patient to allow me to give another intravenous injection. She finally consented and none of the previous symptoms were present.

The increase in leucocytosis observed after each injection of iodide is progressively less as the series advances. In one chronic case in which over one hundred consecutive injections had been given at two to four day intervals, the white cell count before injection was 7,200; the next day it had dropped to 5,000. The differential count remained practically the same. This shows that the iodide was actually producing an exhaustion of cellular activity through overstimulation. The progressive decrease in leucocytosis may in part be accounted for by the fact that there is naturally less antigen available for precipitation into the blood stream after each consecutive intravenous injection and in part to the fact that cellular activity is also less responsive to the same stimulation when repeatedly given.

I have observed three phases in the action of sodium iodide in chronic infections so frequently that I wish to call attention to them. The first is a sense of relaxation, well being and clearheadedness coming on within ten or fifteen minutes, before the patient leaves the office, due no doubt partly to the initial clearing of the blood stream of toxins, and partly to general cellular stimulation by the iodide. The second phase, coming on from two to four hours later, is the general reaction to the dissolved proteins and exudates which flood the blood stream at this time. It manifests itself by a vague stiffness, aching of muscles, headache, loss of appetite and at times a slight rise in temperature. The patient usually says he feels as though he were coming down with a cold. He feels grippy. The third phase, appearing two days later, is the result of the immunity reaction. The patient feels better in every way than he did before the injection. The local reaction may occur at any time from one half hour to several hours or even days after the initial injection.

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Transplantation of Nerve Supply of Muscles.—J. E. Stewart (*Journal of Bone and Joint Surgery*, October, 1925) concludes from a series of experimentations with dogs that it is possible to reneurotize a paralyzed muscle by transplanting a block of active muscle containing its nerve supply into the paralyzed muscle, but the technical difficulties are so great that considerable doubt is thrown on its practical application. Thorough suture of the muscles was attempted in all experiments, using mattress stay sutures and whipping the edges of the muscle ends together with anterior and posterior rows of continuous fine silk. Better results might have been obtained had the extremity been immobilized in plaster of Paris for a time to prevent undue strain on the freshly sutured muscle. Several points were brought out in the work that are considered of value. It was noticed that dogs in which sartorius muscle had been resected and the rectus femoris paralyzed, got about perfectly normally after a few weeks, showing no limp whatever in walking. Experiments therefore seem unreliable.

The need of practising the utmost care in resuturing muscles which have been cut across during any type of surgical operation was clearly demonstrated. A muscle may not be cut transversely with the assurance that it will recover its function. If, however, it becomes necessary to cut muscles during a surgical procedure, care in accurately approximating their ends and thoroughness in suturing them gives a very good chance for their ultimate function.

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Gynecological Operation in Insanity

ELLICE McDONALD, M.D.

Philadelphia

The responsibility in regard to psychotic women should imply something more than their custodial care and should encompass every known avenue of investigation in regard to their mental and physical condition. This is particularly true of the early cases, for there is the greatest hope of recovery.

In this connection, gynecological conditions are often of great importance. Gynecological abnormalities capable of producing symptoms are frequently found in the insane. One of the early workers in this field was Hergt (1) of Heidelberg, who, in 1870, wrote an excellent memoir on disturbance of the mind and diseases of women. He drew a distinction between causation of mental trouble by pelvic disorders and an increase in the course of mental disease, the result of pelvic disease with symptoms of hallucinations, erotic and lascivious inclinations. A correction of the pelvic troubles, according to him, relieved the patient of the superimposed mental excitement. The mental resistance was supposed to be lessened by the weakened condition of the body due to gynecological disease and the ground thus prepared for mental deviations.

An early American investigator was Alexander Skene (2), of Brooklyn, who, in 1878, studied the relation of gynecological disease and insanity in the Kings County Insane Asylum. He published his conclusions based upon five years' work and states his conviction that pelvic diseases, though giving rise to a great variety of nervous disturbances, are rarely the cause of insanity, but that irritation and exhaustion produced by uterine and ovarian disease are simply a predisposing indirect cause in those of already poor mental balance.

The first to make a really systematic investigation in this relation was Hobbs of London, Canada, who, in 1899, reported the results of five years' study and, of 217 patients, found that 185 had organic disease of one or more of the pelvic organs. Of these 185 patients, 171 were operated upon, nine were still to be operated upon and five were unsuitable for operation. In the 171 operations, the pathological conditions present (often several in one case) were: dysmenorrhea, seventeen cases; endometritis, eighty; subinvolution, ninety; hypertrophied cervices, thirty-five; laterated cervices, forty-four; cystic cervices, twenty-seven; polyp of the cervix, five; uterine fibroid, fourteen; epithelioma of the cervix, one; sarcoma of the uterus, one; retroversion of the uterus, fifty-five; complete procidentia, six; ovarian tumor, generally with disease of the tubes, thirty-one; perineal injuries, thirty-five; rectovaginal fistula, one; ischiorectal fistula, one. This give 444 diseased conditions in 171 cases. The operations performed were: curettage, 132; cervical operations, fifty-three; suspension of the uterus, fifty; ovariotomy, twenty-two; hysterectomy, twenty-one; perineorrhaphy, twenty-six; laparotomy for tuberculous peritonitis, two; operation for hematoma, one; myomectomy, two; giving a total of 309 operations. In regard to the mental health, seventy patients recovered from their insanity, in forty-three others there was marked improvement and, in fifty-four, there was no improvement: thus 133 of the 171 who survived the operation (there were four deaths), either recovered their mental health, or had it improved to a considerable extent.

This report of Hobbs is notable because it was apparently the first systematic study of gynecological disease in the mentally upset. About this time, 1897, Rohé, superintendent of the Second Hospital for the Insane of Maryland, reported the results of thirty-four operations, in thirty-two of which the tubes and ovaries were removed. He had eleven mental cures and nine mental improvements. His indication for the removal of the ovaries was hallucinations referable to the generative organs and increased at the time of menstruation.

There was a wave of ovariotomy that seized upon gynecologists about this time and the psychotic women did not escape. Three hundred cases of castration were collected in 1896 by Kroemer (3) who claimed that in seventy per cent. the results were favorable either in complete cures or amelioration. This statement is contrary to all later experience. In fact, there is no operation upon women which is so prone to be followed by mental disturbance as double ovariotomy. In the history of twenty-two postoperative psychoses in the experience of Taussig (4), over two thirds had had double ovariotomy; it was mainly the exciting factor, in others it made the condition worse, and in none was it beneficial. Such is also the experience of Manton, Raimann and Broun, all of

whom, with Taussig, did systematic research among those in mental hospitals. In Broun's twenty-three cases of ovariotomy only two patients recovered mentally after operation. In eleven cases of bilateral ovariotomy, with mental symptoms referable to the pelvic organs and accentuated by menstruation, Raimann (5) obtained no mental cures and, in only three, was there any diminution of the mental symptoms.

The excellent study of Broun (6) was a landmark in the progress of the understanding of the relation between gynecological and psychotic disease. In two notable papers, he reported the results of ten years' work in the female department of the Manhattan State Hospital. In all, 242 women had some form of gynecological operation and this number was less than five per cent. of the total number of women in the hospital during this time. There were sixty-two abdominal sections, fifty-one operations for displaced uteri and 129 minor plastic operations. Of all these 242 operations, 112 women were physically benefitted to a marked degree and 107 to a less degree. Five died, of which two deaths could be attributed to the operation and three to other causes. There were forty-three mental recoveries among the patients operated upon. In no instance was the mental condition of the patient made worse. He concludes that the belief that operative measures ever aggravate the psychoses is not in accord with his experience as he had no such aggravation in any of his cases. The same statement has been made by Manton in an experience of twenty years at the East Michigan Asylum and by Picqué of Paris from twelve years' experience. The rare occurrence of true and persistent psychosis following gynecological operation has been brought out by Rohé (7) who communicated with all the asylums in the United States and Canada and found that, in ten years, only twenty-five patients had been registered as becoming insane after gynecological operation. Broun states that the only postoperative insanities he had seen were cases of septic intoxication where relief from the sepsis brought a slow but steady improvement in their mental state.

Patients, whose mental disturbance might be largely influenced by the presence of pathological lesions, were those, according to Broun, who had benefit from surgical procedures. It was his effort to preserve one or both ovaries if consistent with the welfare of the patient. His conclusions are that, if operation is done, when needed, and the patient not subjected to an uncalled for castration, the mental condition is never aggravated by such a procedure; that there exist in insane asylums many who are suffering in an uncomplaining way from pathological lesions and that mental recovery quite frequently results after the correction of the lesion.

Other interesting reports are those of Henry (8) who reported twenty-eight cases with sixteen mental recoveries and eight mental improvements and one death, and Sauthoff (8), who examined two hundred women in the Wisconsin Insane Hospital and found that 103 had some gynecological lesion. In these two hundred cases only one had the mental symptoms begin after an operation.

The outstanding study of recent years in this branch of research is that of Taussig (4), from the observation ward of the St. Louis City Sanitarium, who examined 537 women and found that 252, forty-seven per cent., had some lesion in the pelvic organs "sufficient either to cause symptoms or to be in a position to cause them sooner or later." His conclusion is that gynecological disease is slightly more common in the insane than in the sane. In the three important groups, senile dementia, terminal dementia and paranoia, the number of women with pelvic trouble was about one third. In demential precox, about half of the women were diseased. About two thirds of the imbeciles were to be so classed, and, in the manic depressive group, the percentage of women with gynecological lesions was as high as seventy-four.

The dementia precox patients showed a large percentage with arrest of development. (This is also my own experience.) According to Taussig, it is more than probable that there is some correlationship between arrested development and dementia precox. In the group of imbeciles, arrest of development was also much more frequent than normal. Of special significance is the frequency of pelvic inflammatory trouble and its associated misplacements of the uterus in manic depressive psychosis.

As nearly as could be determined, 141 of the 252 women required some form of gynecological treatment, forty-seven were put upon conservative treatment and ninety-four fell into the operative class. At the time of operation his aim was to resect the tubes to prevent pregnancy and, if possible, to retain the ovaries.

The age onset of the psychosis was, in 107 women, forty-seven cases from twenty to thirty years, thirty-four cases from thirty to forty years, eleven cases from forty to fifty years, and nine from fifty to sixty years, or sixty per cent. from twenty to forty years, ten per cent. before eighteen years, and ten per cent. after forty years. His conclusions are that the manic depressive has a much greater frequency of gynecological disease (seventy-four per cent. compared with his average of forty-seven per cent.), that this increase is largely due to pelvic inflammatory disease and that there is a proportionately large percentage of mental recoveries in the form of insanity after operation. He draws attention to the necessity, as has every gynecologist who has studied the question, of a routine examination of all women received in the psychopathic wards.

In connection with the large percentage of arrested development, it is interesting that procidentia, or prolapse of the uterus, is infrequent in the woman who has never had children, as Kepler (10) was only able to collect seventy cases from the literature; yet by the circularization of insane hospitals, he was able to collect eighty cases of procidentia in nulliparæ mostly associated with imbecile conditions. The support of the uterus, like that of the intestines, depends mostly upon smooth muscle tone, so that this, no doubt, enters into the question.

Among those gynecologists who ascribe importance to such minor lesions is Schultze (10) of Jena who has drawn attention to the occasional importance of such minor lesions as displacement of the uterus and pelvic inflammation. He related cases to show the prompt and permanent benefit derived from appropriate treatment of the gynecological lesions, correction of the displacements, or provision for drainage secretions. He insisted upon the advantage of having a trained gynecologist on the staff of every hospital

for the insane and that there should be provision for an operating room. He recounts the experience of Bossi and others as to the value of immediate gynecological examination in the early stages of a psychosis.

The mentally disturbed woman thus has, in the opinion of these gynecologists, the right and necessity of special care and examination, not only on account of any possible gynecological lesion she may have, but also for the reason of the influence upon her psychosis. Gynecological lesions are quite frequently found, more frequently indeed than in the average run of gynecological patients. The following table is made up of the reports of various gynecologists and is an expression of the frequency of gynecological lesions in the insane. This table includes only the gynecological lesions requiring treatment if these had occurred in the sane.

FREQUENCY OF GYNECOLOGICAL LESION

	No. of Cases	*Lesions*	*Percentage*
Broun	700	543	77
Manton	100	81	81
Lawrence	100	84	84
Hobbs	220	188	85
Clause	554	..	15
Danilo	200	138	69
Hall	554	220	38
Taussig	527	252	47
Picque	..	..	89
Ripping	100 (autopsies)	33	33
Davenport	387	361	92
Sauthoff	200	103	50

Tomlinson (11) states that, of 937 insane women admitted, 233 had some menstrual disorder, 443 had leucorrhea, 408 had uterine displacements and in these 222 had adhesions binding down the uterus, seventy-nine had disease of the ovaries, 337 had lacerations of the cervix, 424 had lacerations of the perineum, 238 had cystocele, and 229 had rectocele.

If a collection of the statistics is made of such series that allow of exact deductions, 3,664 insane patients, examined by competent gynecologists, had gynecological lesions in 2,086 instances. *In other words, in this large collection of insane women, there were gynecological lesions capable of producing symptoms in about sixty per cent. of the cases.* It is to be presumed that these gynecologists were competent to recognize gynecological lesions when they found them, and, in those cases where the authors are known to me, my opinion of their ability is of the highest. It is to be expected, inasmuch as the gynecologist was called to the insane hospital on account of his special knowledge and in a consultation capacity, that he may be presumed to be a man of experience and judgment. So, it thus may be taken as proved that, in the opinion of competent gynecologists, sixty per cent. of insane women have gynecological lesions which require treatment, *per se,* on account of the gravity of the lesion, regardless of the influence upon the psychosis. In my experience in the wards of the Philadelphia General Hospital and in private hospitals, the frequency of gynecological lesions in women with psychotic disturbance is as great as that of the collected statistics, sixty per cent., and, indeed, it is my opinion that if a very careful examination is made from the point of view of influence upon the vegetative nervous system, more than this percentage will be found. This does not mean, by any means, that all these women should be operated upon, nor have I been able to find in the psychotic patients the very large percentage of infection that was reported by some investigators.

Operation upon the insane has little evil results if not mutilating and if done for definite lesions after the patient has been put into the best physical condition. It is true that the insane bear operation rather poorly and have a slightly higher mortality on account of conditions—1, their upset metabolism, and 2, the difficulty of postoperative care from their lack of cooperation and difficulty of management.

Mental psychosis, as a result of surgical operation, is at the present day not a common occurrence. In former years, when the postoperative treatment was less intelligent and there was much more intoxication from poorly given anesthesia, prolonged operation, free use of drainage and lack of detoxicating measures after operation, there was much more postoperative insanity. The free use of purgation, restriction of water, the frequency of abdominal drainage, and absence of narcotics was the custom in former years and these all combined to cause intoxication and disturbance. Dr. John G. Clark has told me that he used to see postoperative insanity much more frequently in former years under the old conditions, when he was Dr. Kelly's assistant, than he sees at the present time.

Postoperative psychosis is relatively very uncommon. Mitchell (12), in a study of 344 cases of postoperative neurasthenias and psychoses, found thirty-one out of 222 women with disturbance. Of these, seven were actual psychoses and five followed ovariotomy or hysterectomy. Taussig has drawn attention to the coincidence of ovariotomy and postoperative insanity. He has seen twenty-two postoperative insanities and of these fourteen had double ovariotomy and, in some, it was clearly the exciting cause, where, in others, it made the mental disturbance worse. In Mitchell's collection chosen from 344 cases of mental or nervous disturbances, of twenty-nine cases of psychoses or neurasthenia in females following operation, thirteen operations were ovariotomies. There were only two males in the thirty-one cases reported. Of these twenty-nine cases only seven had psychoses and the rest had neurasthenia, and, of the seven psychoses, no record is given of the duration or final result, except in one who died in mania, but from a study of his tables not more than three had a permanent psychoses. A classification of the time of onset is made by Regis (13) who divides these cases into those coming on immediately after operation and anesthesia, those coming on later and due to septicemia and shock and those coming on after weeks or months and due to asthenia from prolonged illness or lack of internal ovarian secretion.

In a consecutive series of 1,300 gynecological operations Kelly (14) found that no less than fifty cases manifested some well defined change in disposition, irritability, depression, suspicion, and other symptoms, which usually vanishes in a few days; but, in about 1,600 operations, there were forty severe cases with more permanent symptoms of mental disturbance. Of these, sixteen followed double ovariotomy and three followed removal of one ovary alone. He has no records of the number who did not recover mentally, but of fifteen patients from his private hospital thirteen recovered and remained well

while one became persistently insane and one remained mildly demented.

The character of the operation apparently has an influence in two ways, first, in regard to the abstraction of ovarian secretion, and second, from the amount of intoxication and metabolic disturbance caused by the operation. Ovariotomy is more likely to cause postoperative mental disturbance than any other gynecological operation and Urbach has reported five cases after 106 gallstone operations. At the time these gallstone operations were done, drainage of the gallbladder, a most disturbing procedure with prolonged convalescence, was much more frequent than at the present time. Ophthalmological operations are also among the surgical procedures more frequently followed by postoperative psychosis and this form of psychosis is more frequent in children, old people and hysteropathics.

The probability of recovery is high and it is to be expected that in at least three quarters of the cases of postoperative insanity the patients will recover their mental health. All forms of psychoses are found, exactly as in puerperal psychoses, but the most frequent are the acute hallucinatory confusional insanities or confusional psychoses with motor delirium. These designations of the psychiatrists are merely descriptions of mental symptoms and in no way describe any underlying pathological or cell change.

Most surgeons and psychiatrists believe that, when any postoperative insanity occurs, there is an underlying psychotic tendency and that the surgical procedure merely "pulls the trigger." This is simply begging the question as to the causation and it is quite probable that anesthesia and operation may in themselves produce a psychoses. Of course, it is true, as a physiologist who had been through a trying experience in the war has said to me, that "if there is stress and mental and metabolic disturbance enough, anyone can go crazy, but some people go crazy easier than others." Some achieve psychosis under local anesthesia and some under gas for tooth extraction, but generally it is the operation producing most metabolic disturbance which produces most postoperative psychoses.

It is of interest to note from the work of Overton, Pahl, Traube, Warberg, Weisel and a number of other investigators, that anesthetics in themselves produce a decreased cell permeability and decreased conductivity and Clowes has shown that anesthetics produce an effect closely comparable to calcium chloride and that both actions are referable to the alteration in the interfacial film. This can be demonstrated in the nonvital systems and an emulsion in a glass beaker can be anesthetized. We have found that decreased cell permeability and decreased cell conductivity are associated with vagus preponderance, and that vagus preponderance exists in four fifths of the cases of mental psychoses. Shock is also associated with vagus preponderance. So that, in surgical procedure there is an increase of vagus preponderance which, added to an already great preponderance, may produce such cell changes as to induce postoperative psychosis in one so predisposed.

The probable train of circumstances in postoperative psychosis is that a patient with vagus preponderance is increased in her preponderance by the anesthesia and operative measures and has not the measure of recovery seen in patients with normal balance. The frequency with which postoperative psychoses give a history of extreme apprehension, worry and fear before the operation is very suggestive of vagus preponderance as these are frequent symptoms of, and in themselves, produce vagus preponderance. This explanation might be extended to other cases of psychoses other than postoperative, but, in most of these others, the exciting cause has not been as well studied by the research in cell changes. Anesthetics and narcotics (the lipoid solvents) have been well studied in regard to colloid changes, so that it is possible to say what their action will be upon the human colloid cell and to show that this action coincides with the explanation given by us upon the basis of the vegetative nerve balance as an expression of cell changes. Other poisons, such as tetraethyl lead, syphilis, alcohol, etc., will also produce psychoses and this suggests that all psychoses are due to toxins or poisons which produce changes in the cell membrane and so cause deviation from normal of conductivity, permeability, viscosity, surface tension, potential differences to alter bioelectric variation. All these are essentially expressions of alteration in the colloid structure and Freundlich (15) has shown that, in coagulation of negative suspensoids of colloids, those of high valence, like calcium, magnesium and aluminum, have a much higher coagulating power than those of the low valence, like sodium and potassium, and higher than would be expected from the increase in charge. The adsorption to the surface film decreases more rapidly than would be expected from the increase in valence. But this action does not depend upon inorganic ions alone, but some organic ions have an exceptionally strong coagulating action. The anion of salicylic acid coagulates the positively charged aluminum sol much more intensely than the anion chloride, and the cation of morphine chloride has a much stronger coagulating action upon the negatively charged arsenic sulphide sol than has the cation of potassium. So that it may be seen that these researches of the colloid chemist are not idle abstractions, but directly applicable to such substances as narcotics and anesthetics, and give an explanation of the mechanism of their action upon the cells of the colloid human body.

These changes in the cell are directly indicated by changes in the vagus sympathetic balance. For example, blood pressure is higher in sympathetic preponderance and low in vagus preponderance; but calcium chloride produces a fall in blood pressure accompanied by marked cardiac irregularity. This fact does not depend upon our own statements alone, but has been amply confirmed, most recently by Major (16) who also observed that the irregularity was overcome by potassium chloride.

Calcium chloride, according to our researches, produces vagus preponderance which is an expression of decreased cell permeability and potassium chloride acts as a sympathetic stimulant, producing increased cell permeability and conductivity, so correcting the action of the calcium, hydrochloric acid and ammonium chloride (all of which produce acidity and vagus preponderance and reduce blood pressure as does the parathyroid extracts of Collip). All of these in our experience produce decreased smooth muscle reaction and vagus preponderance.

So that in the study of postoperative psychoses, it is possible to describe the action of the anesthetic and the shock in terms of cell changes and give a plausible explanation for the mechanism of the production of the disorder. This explanation fills the gap between the cause (the operation) and the terminal result (the psychosis), and this method is possible of application to any diseased condition or process of the human body. Symptoms should be explained in terms of cell changes and research should concern itself with vital processes instead of terminal or end results of disease. Until it does so, medical treatment will fail in its function because it will not be based upon any clear understanding of the action of the body cells or of the action of medicinal agents put into the body. The practice of medicine has been a rule of thumb method, but it is possible by applying the principles of colloid chemistry to get a reasonable explanation of old approved methods and open a wide vision of the application of new therapeutic procedures.

In the study of psychosis in the female, Bossi (17) of Genoa has opened a very interesting field. He believes that even slight alterations in the female genital apparatus may lead to mental deviation. Among other conditions he draws attention to suicidal tendencies and believes that half the suicides in women arise from gynecological causes, especially at the times of puberty, the menstrual epoch, pregnancy, puerperium or the menopause. These different physiological episodes are not the causes of suicidal tendencies, but serve as an opportune cause in an individual who has a psychotic tendency. He also believes that minor gynecological lesions, like retroversion, may produce conditions influencing a psychosis and that their surgical cure often benefits the mental condition.

His results were investigated by Ortenau (18) who went to Bossi's clinic and gave the details of seven cases of mental disorder which subsided under gynecological measures. Bossi's aim is restoration of normal conditions and claims that when these conditions are corrected, the psychic disturbance usually subsides. He pleads for the necessity of a gynecological examination in every case of mental disease, especially before committing any woman to an insane hospital. He also insists that gynecological examination should be a routine measure in every crime committed by a woman in the period just preceding or during the menses. This would certainly, he declares, prevent many errors in justice.

(*To be continued*)

Puerperal Infection: A Study of an Etiological Factor

DANIEL H. BESSESEN, M.D.
Minneapolis, Minn.

Puerperal infection has been recognized since the earliest history of medicine. Those names which Lea's (1) careful study have associated with the advance of knowledge on this subject are but a few of the long list of men—earnest, courageous workers all—who have given much of their time and work, some their lives, in an effort to solve this age old problem. It is only recently (1773) that any control has been obtained on what has been an inevitable, hopeless, fearful disease. Charles White's method of delivery in separate apartments, isolation from fever cases, and disinfection of rooms with brimstone dropped the terrible mortality to within short range of our present control. Gordon of Aberdeen (1795) demonstrated its infectious nature. The further light shed by Oliver Wendell Holmes (1843) and finally the excellent and careful studies of Semmelweiss (1847) have reduced to the present morbidity and mortality this disease which was not clearly understood until Pasteur (1879) related puerperal infection to bacterial organisms.

The more recent work by R. Koch, Doleris, Fraenkel, Döderlein, Krönig, Menge and others have made fairly obvious and more certain the maze through which our predecessors were wandering.

OCCURRENCE

The number of cases of puerperal infection which occurs in any region, institution or practice is dependent upon the criterion which is accepted as the standard of fever. After ruling out other infections, and determining that any fever is due to some inflammatory disturbance—toxemic or infectious—of the genital system during puerperium, the temperature elevation taken as the highest normal in a way determines the percentage morbidity. A Copenhagen hospital, taking 99.8° by rectum as the highest normal, has a morbidity of 46.0 per cent. Others—Paris clinic, Baudelocque and Kiel—with 99.8° by mouth as standard, have 11.72 per cent—15.9 per cent. morbidity. The Rotunda, Queen Charlotte (London), St. Mary's (Manchester), Vienna, Montreal, Sloane (2) with 100.0 as standard have from 6.0 to 22.9 per cent. morbidity. The Paris clinic, Basel, Strasburg, Munich, Wurzburg, Buda-Pesth with 100.4° standard have a morbidity of 8.94 per cent. to 15.8 per cent. The Sloane (3) Hospital in New York with an arbitrary standard of 100.6° shows a morbidity of 1.75 per cent. for the first twenty thousand cases and of 0.485 per cent. for the last eight thousand cases.

One would expect that the higher the accepted standard, the lower the morbidity would be, and in like manner the higher would stand the mortality rate among the morbid patients. There is observed a mortality of 0.09 to 0.08 per cent. among all cases and 2.0 per cent. to twenty-five per cent. of morbid cases depending upon the elevation of temperature accepted to the criterion of puerperal infection.

Some authors rule out of their figures all cases which do not contract the fever in the hospital; some rule out those cases which have been sent into the hospital after delivery outside; others include all types of puerperal infection cases, no matter what their

origin or derivation. So these figures are rather confusing. It is well perhaps to know that on the average, one in four hundred (4) (5) maternal cases results in death from puerperal infection: that in the United States an average of eight thousand die annually from this cause; in England and Wales, three

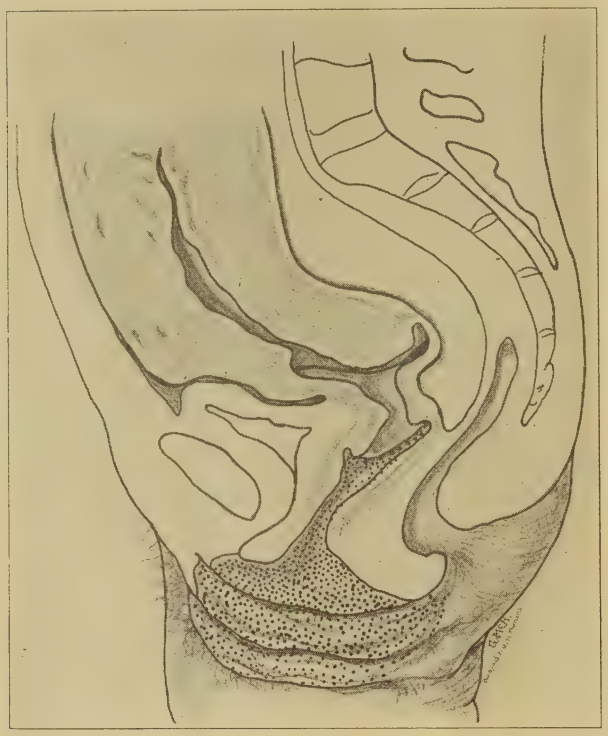

FIG. 1.

to five thousand; in Germany six thousand; and approximately ten times this number recover with serious after results. From 24.6 per cent. to eighty-three per cent. of all maternal deaths from childbirth are due to infection—varying with the region, the surroundings, the education of the peoples and other etiological factors (6) (7) (8) (9) (10) (11) (12) (13) (14) (15).

In reviewing a series of 936 obstetrical cases entered into Asbury Hospital, Minneapolis, relative to puerperal infection, the definition of puerperal infection stated by the British Medical Association is the accepted standard—a temperature of 100° by mouth on any two days from the second to the eighth inclusive, if arising from inflammatory change in the genital canal is puerperal infection. These cases were admitted into the hospital from January 1, 1924, to April 1, 1926, and of them 119 (12.71 per cent.) showed puerperal infection according to this definition.

Comparison made with the etiological factors described in the literature (4) (5) (7) (9) (12) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) shows that the length of first stage ranged from forty minutes to ninety-eight hours and ten minutes; second stage from eight minutes to forty-seven hours and twenty-five minutes; third stage, from one minute to six hours and thirty minutes; interval between rupture of membranes and termination of third stage, from one minute to forty-eight hours; fifty-seven girls, sixty-four boys, eight stillbirths; mothers sat up on the sixth to twenty-sixth days postpartum; Crede expression of the placenta in all but nine cases; large hemorrhage in ten; uterine packing in two; manual removal of placerta in five; vaginal examinations in eighteen; low forceps in thirty; medium in eight; high forceps in five; version in one; blunt hook in one; contracted pelvis in one; lacerations of perineum first degree in thirty-two, second degree in eighteen, third degree in one, repair of old laceration in two, episiotomy in thirty-seven, two of which had additional lacerations; retained membranes in one; ruptured uterus in one; one fetus was dead three weeks before delivery; anemia was concomitant in one; three mothers had associated abnormal pernicious vomiting, bronchitis and chronic scalp trouble respectively. Bruising and constipation were not carefully investigated but were commonly present.

This then leaves unexplained the etiology or cause of sixteen cases—that is, there was no apparent error in preparation of the patient, no operation, no operative manipulation, no accidents of labor, no foci of infection in the patient's body. Infection in these sixteen cases must in some way have gained entrance to the uterus. It is to seek an explanation for these cases that this study is advanced—to determine a

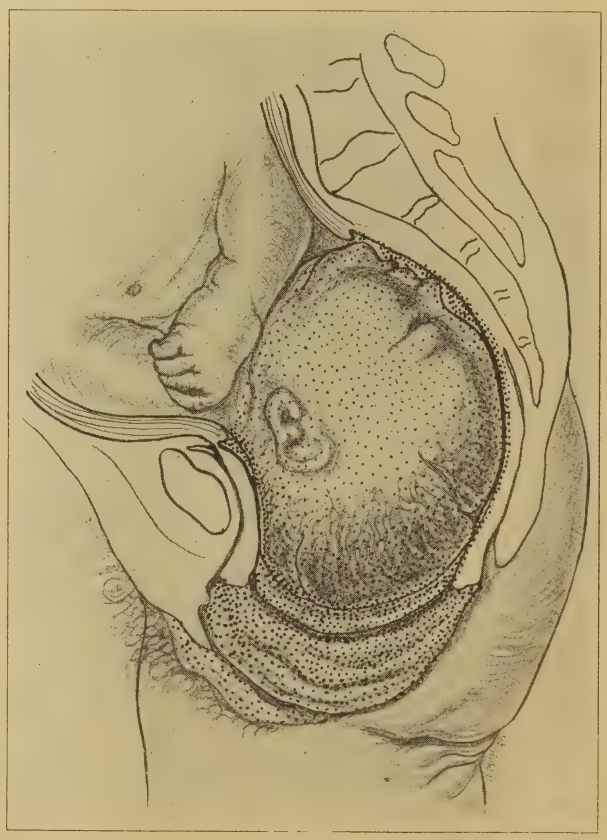

FIG. 2.

method of entrance of the bacteria into the uterus which may apply not only to these sixteen cases but to cases with other etiological factors concomitant. The thought advanced is that the usual mechanism of labor, especially the second stage, conveys bacteria

from the vagina into the uterus. It is a fact that bacteria are present in the vaginæ of a variable percentage of women (Fig. 1). Numerous researchers (4) (6) (8) (18) (21) (23) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) have found bacteria in

Fig. 3.

the vagina; they are found in thirty-five per cent. of the vaginæ of normal women (8) (43) (44) (58); streptococci are found in from four per cent to fifty per cent. of vaginæ of normal women (42) (46) (59); in forty per cent. to fifty per cent. of pregnant women (42) (60) (61); in ten per cent. to seventy per cent. of vaginæ of women in labor (21) (42) (60); and in thirteen per cent. of vaginæ of women during puerperium (62). Haemolytic streptococci are found in thirty-three per cent. of vaginæ of normal women (55) (63); in one per cent. to fifty per cent. of pregnant women's vaginæ (40) (64); in the vaginæ of five per cent. to fifty per cent. of puerperal patients (55) (65) (66). Of those patients who had no streptococci in the vaginæ, in only four per cent. does fever develop, in eighteen or 18.7 per cent. (46) (41) of those with nonhemolytic streptococci does fever develop, and in seventy-five per cent. of those with hemolytic streptococci in the vaginæ does fever develop. The close relationship which exists between the figures concerning the presence of bacteria in the vagina—in normal, pregnant, parturient and puerperal women—and the actual appearance of infection in puerperium would indicate that the vaginal flora is the etiological factor in a large number of our present puerperal infections. The sixteen cases in this series demonstrate that the bacteria have some means, other than that found in the literature, of gaining entrance into the uterus.

The question is, then, how did these bacteria gain entrance into the uterus? The mechanism of the second stage of labor is in itself an important etiological factor in introducing these bacteria from the vagina into the uterus. On the one side is a culture tube, the uterus, on the other is an infected surface, the vagina, from which a smear is made by the fetus, which is wiped down over the infected surface and carried back into the culture medium, the uterus, where the subsequent growth of the bacteria gives rise to the fever indicative of infection. On analyzing the mechanism of delivery, it is evident that during uterine contraction, the cervix pulls away exposing the presenting point of the fetus. As dilatation becomes more complete, this presenting point is contaminated by the vaginal mucosa with which it comes in contact (Fig. 2). This is more marked when dilatation is complete and pains of a bearing down nature appear. At this time, the head of the fetus is forced down into the bulging perineum, while the cervix and lower uterine segment are retracted by that action of the uterus which is characteristic of the second stage of labor (Fig. 3). During relaxation the perineum forces the head back and the relaxed uterus allows the return of the cervix and lower uterine segment to their original position. Thus the contaminated

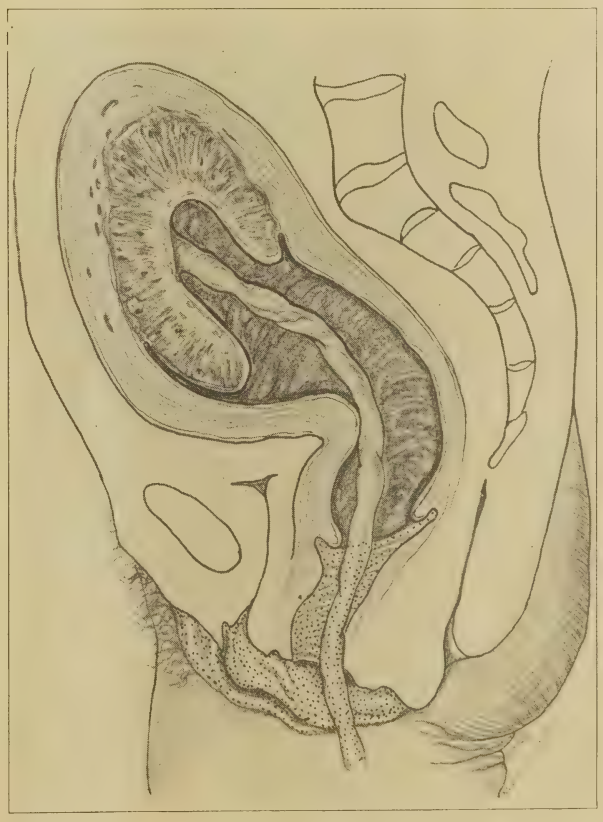

Fig. 4.

head, either covered or not covered by the membranes, enters the uterus. This process is repeated as long as the second stage lasts, and so it is that in long labors infections are more common and more severe, often fatal. With each downward descent of the fetus into the vagina, a higher point of the fetal

surface is contaminated by the bacteria which have previously been drawn into the uterus, and when the fetus again rises into the uterus, a higher point of the uterine interior is contaminated. Infections may occur with short second stage, where virulent bacteria are present in the vagina.

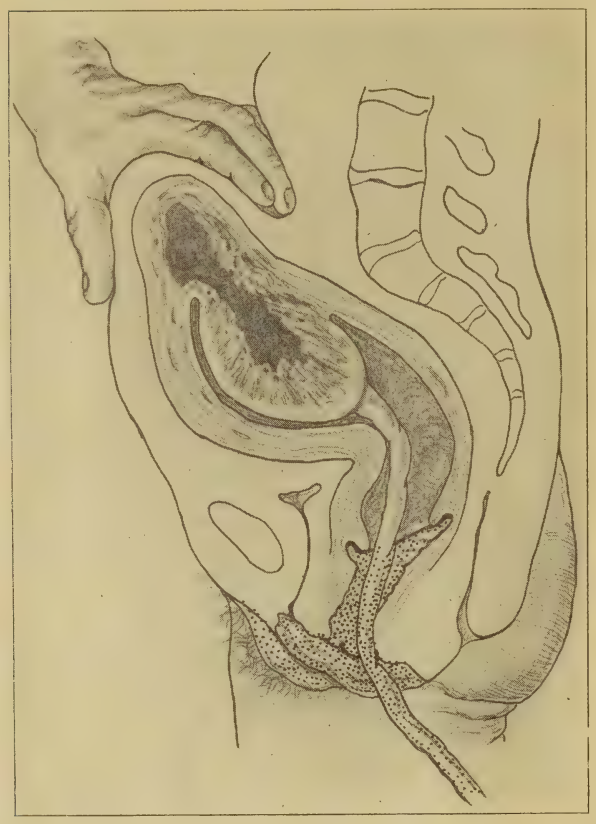

Fig. 5.

This mechanism (Fig. 4) also pertains to the Credé expression of the placenta, for here pressing the hand down on the large relaxed uterus allows the cord to pass from the uterus into the vagina. In the course of manipulation, this pressure is removed, the uterus returns to its normal shape, in this fashion drawing the contaminated cord back into the uterus. Thus Credé expression increases the number of infections. This passage of the cord may act within the membranes; however, with a lateral rupture of the membranes, the cord would come in direct contact with the uterus. The membranes themselves may form part of the swab which cultures bacteria from the vagina into the uterus (Figs. 5 and 6).

Early rupture of membranes leads to dry labor which means a long labor, especially a long second stage—so that dry labor increases the number of infections owing to the prolonged action of the fetus descending into the vagina and ascending into the uterus. With a dry labor, or early rupture of the membranes, there is also possible infection of the liquor amnii which acts as a culture medium and develops a more violent form of infection. In cases of placenta previa, the bleeding resulting in the last trimester, serves as an efficient plasmodium for developing virulent strains of bacteria in the vagina. This is a further aid in increasing the severity of the infection, when the bobbing of the fetus during labor draws the bacteria into the uterus.

So any body which passes through the infected vagina into the uterus, whether the cord, a part of the child, the hand or an instrument, will increase these possibilities for puerperal infection. Various operative procedures used in parturition; as forceps, version, craniectomy, and other methods, are performed within the amniotic sac, which protects the interior of the uterus. For this reason, these operations make the liability for infections (14) only three to five times that of normal labor. If a long duration of the second stage is added to the operative procedure, the morbidity will naturally be higher still, and yet higher if there is early rupture of membranes. However, none of these procedures carry with them the high risk of infection which does manual removal of retained secundines. This is the most dangerous operative procedure of obstetrics, for the reason that the hand or instrument passes through the bacteria covered vagina usually to the interior of the fundus of the uterus, thus implanting bacteria over the entire surface of the endometrium.

Prophylactic treatment (55) (67) (68) (69) (70) (71) (72) is necessary to prevent the appearance of

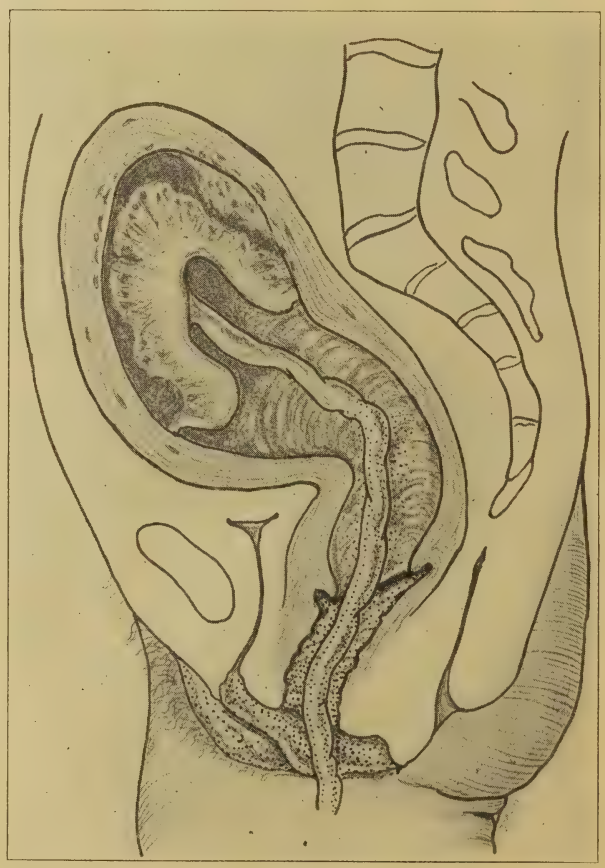

Fig. 6.

puerperal infection. Protection by prenatal care—cleanliness, increase of resistance by foods, liquids, rest, sleep, cheerfulness, out of door life, care of the bowels and kidneys—is of primary importance. Coitus should be forbidden in the last few weeks. At the time of delivery one should not interfere

except under the best of conditions and in case of necessity. Each case should receive the same care as a major operation.

Rectal examination should be made in preference to vaginal. Vaginal examinations are never made unless absolutely required. The body and clothing of the surgeon should be clean, the hands disinfected by scrubbing for ten minutes in soap and water and rinsing in alcohol for three minutes. The hands come in contact with the thighs, vulva, abdomen of the patient, so however sterile to begin with, they may not remain so. Gloves are a necessity: they protect the patient and the doctor. The number of lacerations is less with the use of gloves. Especially should long gloves be worn in performing version for this reason. The use of sterile gown, with cap and mask, is desirable.

The patient should be cleansed, shaved, clothed with sterile garments and placed in a clean bed. If, in using soap and water for perineal cleansing, some of this enters the vagina, it may carry with it infection to the uterus. For this reason, a sponge should cover the introitus during this cleansing. The vulva is painted with mercurochrome ten per cent. beginning with the labia minora, then the labia majora and then the perineum. An applicator paints this same substance over the vestibule and vaginal orifice. Numerous antiseptics have been used to attempt sterilization of the vagina. According to the statistics, some authors (46) (53) have presented some improvement in morbidity by their use, others (1) (71) (19) have noted an increase in infection after their use, while still others (1) (80) have noticed no change. The literature on this subject shows by no means that the vagina cannot be sterilized. If those drugs and methods used by the authors mentioned have not secured sterilization of the vagina, then drugs and methods must be found which will secure sterilization of the vagina. Apparently a douche in any form is of no value, or at least of very transitory value.

A diminution in the number of bacteria has been found (1) (81) for a period of eight to ten hours after administration. The drugs used in the douche have been lysol, lysoform, saline solution, lactic acid, bulgarian sour milk, bichloride of mercury. An antiseptic to sterilize the vagina apparently is more active when painted on the surface of the vagina. It should not injure the mucosa, and should interfere as little as possible with the vaginal secretions. Drugs which have been painted on the surface of the vagina are oxycyanate, sublimate, lysoform, potassium permanganate, boric acid, silver nitrate, *essingsaure tonerdelösung*, "bolus powder" and equal parts of crystal violet and brilliant (50). These drugs apparently secured some benefit in a series of forty-four cases, only two being infected. Mercurochrome in five per cent. to ten per cent. solutions may be used in the vagina and over the surface of the cervix without damage or injury to the mucosa. The use of iodine in these cases apparently causes swelling and dryness of the mucosa which the mercurochrome does not. Rucker (73) uses it preceding introduction of the bag or version. A series of cases at the close of this paper is reported in which mercurochrome has been used to sterilize the vagina.

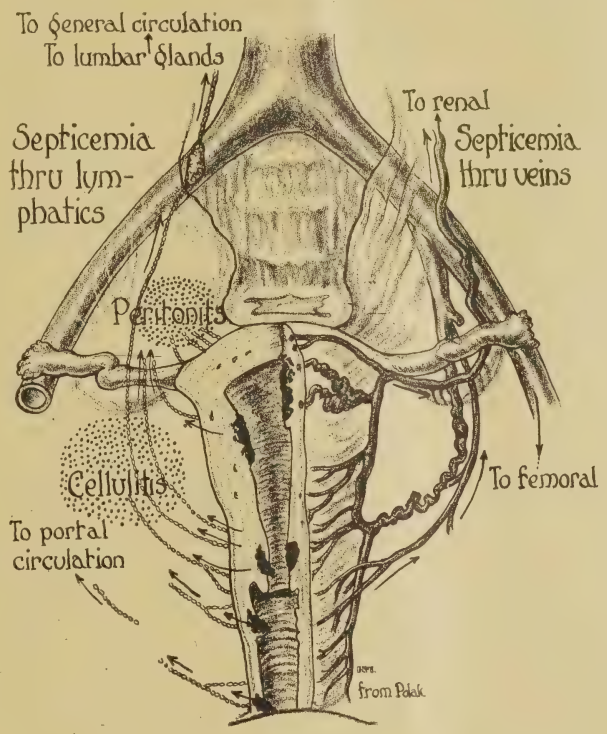

Fig. 7.

No interference is made in the conduct of the second stage of labor except in the case of necessity and under the best of conditions. Delivery is best performed without introducing instruments or hands; when hands or instruments are introduced, they should be covered with the solution of glycerin mercurochrome iodine which will be mentioned later. Lacerations of all sorts are avoided so far as possible, since these easily become infected by the vaginal flora and serve as avenues of dissemination of infection from that large portal of entry—the vagina itself, passing infections either through the blood stream or through the lymphatics. Pituitrin should be given only in multiparæ and after complete dilatation. Forceps are best applied to the head of the child (Fig. 7) carefully so that they come in the axis of the pelvis. If immediate delivery of a poorly dilated and poorly dilatable os is indicated it is better to use Duerrhsen incisions in the cervix and repair directly after the delivery. Fingers are better to dilate with than a metallic dilator. Preserve the bag of waters as long as possible. It is probably wiser not to repair cervical lacerations except to arrest hemorrhage, but all cervical incisions, perineal or vaginal lacerations or incisions should be repaired at the time of labor.

In the conduct of the third stage of labor, Ahland found his lowest morbidity when the third stage was one and a half hours long. If the placenta is separated from the uterus, it is all right to express it, but attempting to express a placenta still attached leads to a violent separation of the placenta, a tearing off and leaving of portions of the secundines, as well as tending to introduce infection as previously mentioned. If Credé's expression is done and parts of the secun-

dines remain within the uterus *do not attempt a manual removal—never invade the uterus* for smears, for placenta, secundines, or clots. The only indication for interference in the third stage is hemorrhage, and it is wiser to pack for this, if packing will check the hemorrhage, in conjunction with the use of blood coagulating drugs given intramuscularly, subcutaneously or intravenously aided by drugs which contract the uterus. After the third stage, with lacerations repaired, leave the parts alone. Watkins (58) has observed that cows have retained secundines until about the ninth day without fatal results. With careful preparation of the patient and careful conduct of labor, any fever which results from retained secundines is usually due to toxemia. It is wiser to attempt removal of retained débris if removal is necessary, when forced to do so by hemorrhage.

All cases of fever, postpartum, should be isolated. Most American obstetricians keep their patients in bed for nine to eleven days, but do not limit their motion. German obstetricians have their patients up in two to four days. The objections (77) (78) (79) to early sitting up are possibility of embolism and prolapse of the uterus. Embolism is very rare later than six to eight hours after delivery unless infection is present. For this reason, any patient who does not show fever (100.0°) may be permitted up in Fowler's position on the third day, sitting up in bed on the fourth day, in a chair on the fifth day and walking about on the sixth day. Sitting up early increases the tonicity of the uterus, aids drainage and prevents bleeding. Prolapse of the uterus, the second objection to this simple remedy for puerperal infections, may be prevented by the knee chest position. This is advised for five to ten minutes night and morning from the second to the sixth or eighth week inclusive, postpartum.

Following is the report of fifteen cases which have been prepared as follows: After shaving, washing and an enema, the labia, perineum and introitus are painted with ten per cent. mercurochrome. A large sterile speculum is then lubricated with sterile glycerine containing two per cent. mercurochrome and 0.6 per cent. of tincture of iodine (three and a half per cent.), inserted into the vagina and five c. c. of this same glycerine mercurochrome iodine solution are injected into the vault of the vagina. A pledget of sterile gauze is placed in the introitus to retain this solution in the vagina. It is observed that the vaginal mucosa is painted by the substance which has lubricated the leaves of the speculum. The first four cases were painted over the perineum, vulva, vagina and cervix with two per cent. mercurochrome, while the technic first described was finally considered best because in a glycerine vehicle, these antiseptic drugs will cleave to the vaginal wall and cover it with a sticky, viscid layer.

Two per cent. mercurochrome was thought advisable in the glycerine solution, because, if remaining in contact with the vaginal mucosa for a long period, it would be less irritating than a stronger solution. Six tenths per cent. of the tincture of iodine was added with the thought of increasing slightly the bactericidal properties of the mixture without making it more irritating. At the same time, if the entire solution were to be absorbed, it would be relatively nontoxic. The head coming down into such a vagina, will carry back into the uterus a coating of this antiseptic and paint the interior of the uterus with this substance rather than with infectious material.

My method of preparing this solution is as follows: Glycerini, 500; mercurochrome, 10; tr. iodini (three and a half per cent.), 3.

The tincture of iodine mixes readily with the sterile glycerine—making an extremely weak solution. The crystals of mercurochrome settle to the bottom of the bottle and inverting the container at intervals leads to its gradual solution in the course of three to five days. This solution has a beautiful reddish green hue, which stains anything it comes in contact with. Warming the mixture hastens its solution somewhat, but apparently does not injure its properties. It keeps well for six months and probably longer. Five cubic centimetres of this substance, the usual amount used in each case, contains four to five minims of tincture iodine—a standard dose, and the two per cent. mercurochrome, which is nontoxic.

Case I.—Patient, aged twenty-six, with family history of tuberculosis, had suffered from an abortion at three months, five years before consultation. She had been a telephone operator previous to marriage. Menstrual and past histories were without event. On physical examination there was present, constipation, hemorrhoids, caries of teeth, chronic tonsillitis, and pregnancy. Preparation with two per cent. mercurochrome twenty-four hours before final completion of labor, which was without mishap. Puerperium normal.

Case II.—Patient, aged twenty-five, with no important facts in the family, marital, social, occupational, or menstrual histories, had had measles, mumps, pertussis, bronchitis, and tonsillitis. On physical examination one found a primipara. She was delivered with low forceps, with a first degree laceration. Preparation with two per cent mercurochrome, twenty-four hours before the final termination of labor. Puerperium normal.

Case III.—A primipara, aged thirty-one, who had had measles, varicella, mumps, pertussis, without any evidence of disease in the family, marital, social, occupational, or menstrual histories. On physical examination, there was found a chronic cholecystitis, and thyroid enlargement, with pregnancy. She was delivered with low forceps, and suffered an episiotomy, and a second degree laceration of the perineum. Preparation with two per cent. mercurochrome, two hours and fifteen minutes before the final termination of labor. Puerperium normal.

Case IV.—A primipara, aged twenty-three, who has had bronchitis; without evidence of disease in the family, marital, social, occupational, or menstrual histories. On examination one found a mitral regurgitation and stenosis, a deviation of the nasal septum, with pregnancy. This patient had an early rupture of membranes, a dry labor, a version with forceps on the aftercoming head, a third degree laceration of the perineum, and retained secundines. Prepared with two per cent. mercurochrome nine hours before the final termination of labor. Puerperium febrile. Patient had a temperature of 100.4° for two days.

Case V.—A primipara, aged thirty-two, who had had measles, mumps, influenza, and sore throats, with no indications of disease in the family, marital, social, occupational, or menstrual histories. On

physical examination there was found, pyorrhea alveolaris, caries of teeth, constipation, acute bronchitis, and pregnancy. She was delivered with low forceps, with a second degree laceration of the perineum. Prepared with ten per cent. mercurochrome and glycerine mercurochrome iodine solution, four hours and fifteen minutes before final termination of labor. Puerperium normal.

CASE VI.—A primipara, aged thirty-two, single, with no evidence of disease in the family, social, occupational, or menstrual histories. On physical examination there was no evidence of disease. Patient was pregnant. She suffered from acute appendicitis, during pregnancy, which was relieved by operation. Preparation with ten per cent. mercurochrome, and glycerine mercurochrome iodine solution, twelve hours before the final completion of labor. Delivered spontaneously, with a deep second degree laceration. Puerperium normal.

(To be continued)

A New Method for the Early Diagnosis of Pregnancy and the Prognosis of Sex

RICHARD WEISS, M.D.
Berlin, Germany

Abderhalden (1) has shown that protective ferments appear in the animal organism following the parenteral administration of foreign substances, the ferments occurring in the serum and acting as solvents upon certain organic substrates, by inducing a catabolism to peptones. This catabolism and the enrichment of the serum with these peptones, is demonstrable qualitatively and quantitatively. This theory of Abderhalden lies at the basis of the serological diagnosis of pregnancy. However, the original test, which was associated with many difficulties and sources of error through the increased concentration of the serum produced by the catabolism with the aid of the dialyzation procedure and ninhydrin, did not affect the truth of the theory, but made the carrying out of the reaction useless for the general practitioner.

In more recent times a concise and accurate test was developed chiefly by Paul Hirsch of Jena, which has considerably widened the field of application for these serological investigations and which is so simple that it can now be carried out by the general practitioner. It requires no more technic and experience than a quantitative estimation of sugar. The chief requirement is a careful and clean technic according to the instructions and suitable apparatus.

This new test takes its origin from the fact that naphthochinon sulphate of sodium gives a very characteristic dark coloration with amino groups, the intensity of which depends upon the amount of the amino groups contained in the solution. If the serum alone is tested and compared with a test of the same serum that has come in contact with the substrate, we can recognize in a simple manner from the different intensity of the color in the two tests, whether decomposition products have developed or not. If the serum has undergone catabolism, the corresponding color is darker than that of the serum serving for comparison.

The technic of the reaction is as follows: With the patient fasting, blood is drawn through a Strauss needle from a vein of the arm into test tubes, and, preferably, two test tubes should be filled (nine c. c. of serum) and set aside to allow coagulation to take place. The serum is then poured off and also centrifugalized. Hemolytic serum should not be used, as this in itself gives positive results. The serum thus acquired is then diluted with 1:500 vuzin solution, so that there is an increased concentration of 1:10,000 (0.05 c. c. vuzin solution to each one c. c. of serum). The sterile tubes are then prepared according to the following scheme:

	P	T	O	Test
1.	Placenta substrate with 1 c.c. serum.	Testicular subtrate with 1 c.c. serum	Ovarian subtrate with 1 c.c. serum	
		with 1 c.c. serum	with 1 c.c. serum	Control
2.	1 c.c. serum	with 1 c.c. serum	with 1 c.c. serum	Control
3.	1 c.c. serum			

The tubes are closed with rubber stoppers that have been sterilized by boiling, carefully freed from any air bubbles that may be present, and placed in an incubator, where they are kept at 37.5 degrees C. for twenty-four hours. Up to this time the work must be done in absolutely sterile manner. If an incubator is not available, the test may be carried out in a moderately warm place, but the duration of the period of incubation must then be lengthened. Of course, the accuracy of the test will suffer somewhat. After twenty-four hours, deproteinization is done by removing the stoppers and adding the following amounts of the solutions mentioned to each tube, one after the other: seven c. c. of distilled water; one c. c. sodium tungstate solution; one c. c. two thirds normal sulphuric acid.

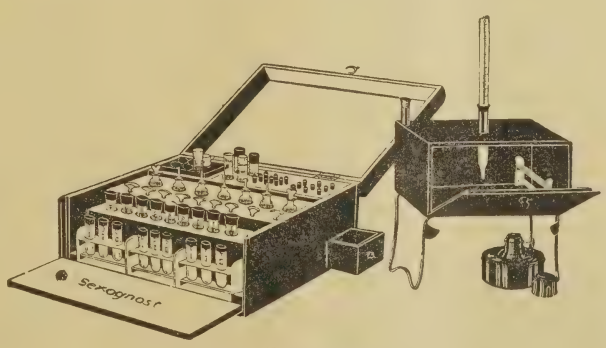

FIG.—The sexognost.

The tubes are again stoppered and well shaken. If a centrifuge is available, rapid centrifugalization can be done immediately. If not, the tubes are allowed to stand for one hour and then filtered through

a dry filter, and also into the tube that is marked similarly and standing behind, exactly up to a five c. c. mark. To this five c. c. of clear filtrate is added, first one drop of phenolphthalein solution and then soda solution, one drop at a time, until there just appears a persistent red coloration, which must be of the same intensity in all the tubes. When this is reached, the proper dye solution, namely, 1.5 c. c. of a freshly prepared 0.5 per cent. solution of naphthochinonsulphate of sodium, is added. After a thorough shaking this is placed in the dark for twenty-four hours, or at least over night. The dye solution should always be prepared fresh for each series of tests.

If one wishes to test with P (placental substrate for pregnancy) or with T and O (testicular substrate for male and ovarian substrate for female), one must use always the corresponding test tubes for control. If the serum is not sufficient for the nine tubes, one must be satisfied with one control for every substrate tube.

On the following day there is added to each tube one c. c. of the acetate mixture, and the tube is shaken; then one c. c. of the thiosulphate solution, and the tube is then filled to a fifteen c. c. mark with distilled water and again shaken. The excess of naphthochinonsulphate, not used up by the amino groups, is decolorized by the thiosulphate. The corresponding tubes are then set up alongside of one another in the comparator and their intensity of color is tested. If one of the test tubes (placental, testicular, or ovarian) is darker colored than the corresponding two or one control tubes containing no organic substrate, then catabolism has taken place, that is, the test is positive (P denotes pregnancy, T denotes a male, and O denotes a female fetus).

The following are the requisites for the proper carrying out of the test: 1. the blood should be taken in a fasting state; 2, the rejection of hemolytic serum; 3, sterility up to the time of deproteinization, and 4, accurate pipetting.

A specially constructed outfit, called the sexognost, is very useful. It consists of all the necessary apparatus, reagents and albumen powder, properly arranged, that are necessary for the test. The tubes are divided into three groups: Group 1 (marked P) for the demonstration of pregnancy; Group 2 (marked T) for the demonstration of a male fetus; Group 3 (marked O) for the demonstration of a female fetus. The first row contains the incubator tubes in three small metal stands, which can be placed into the incubator directly after their preparation. The second row contains the colorimetric tubes for comparison, in which the suitable test is carried out. The comparison of the various shades of color is made in the comparator, which is also furnished.

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The Sedimentation Test in Gynecology*

IRVING SMILEY, M.D.
New York

The history of the sedimentation test dates back at least several hundred years. It was thought at the time that the test might prove of some value as an aid in the diagnosis of diseases, but, as such, led to little or no results and was abandoned. It was revived in 1917 by Fahraeus, a Swedish student, who employed it in the study of pregnancy. His conclusions were extremely interesting, and of sufficient importance to stimulate other investigators, especially among the Germans, to pursue the work further, resulting in the accumulation of an elaborate literature dealing with the rate of sedimentation in normal and abnormal conditions. This short résumé bears only upon conditions in the obstetrical and gynecological field of medicine, and an attempt will be made to show its application as an aid in diagnosis, differential diagnosis, prognosis, and other uses.

Several methods can be used to demonstrate this peculiar phenomenon of the blood in disease, but the Linzenmeier technic, because of its simplicity and accuracy, has superseded all other methods, and has been more or less universally adopted as the method of choice. The technic of the test is performed as follows: The tubes used are made of hard glass five mm. in diameter and 6.5 cm. in length, having a capacity of more than one c. c. They are marked at the one c. c. point and also at the eighteen mm. point. Lately the six, twelve and twenty-four mm. marks have also been added. These tubes together with a one c. c. hypodermic syringe with 0.1 c. c. divisions complete the outfit. It is important that both tubes and syringe be clear and dry. Two tenths c. c. of a five per cent. solution of sodium citrate solution is drawn into the syringe, to which is added 0.8 c. c. of blood drawn from one of the superficial veins of the arm, making the total contents of the syringe one c. c. The blood solution and the citrate solution are slowly mixed and then transferred to the tubes. The marginal level in the tube must be exactly at the one c. c. mark. The reactions are tested at room temperature since it has been found that in the incubator the rate of sedimentation was hastened, while the reverse took place when the specimen was placed in the refrigerator. The blood should be taken when the patient's stomach is empty, as acceleration of the rate may be caused by active digestion. The time is noted when the mixture is placed in the tube, and again when the line of demarcation between the erythrocytes and the plasma reaches the eighteen m.m. mark. A millimetre reading may also be taken at the end of the first hour. With blood therefor that sediments rapidly the results can be ascertained in a short time.

*From the Department of Gynecology, Bronx Hospital. Read before the Bronx Hospital Clinical Society, February, 1926. The North Bronx Medical Society, April, 1926.

Many theories have been advanced and many investigations have been undertaken to determine, if possible, the mechanism underlying the separation of erythrocytes from the plasma. Several factors undoubtedly enter into this phenomenon but definite information as to its exact causation has not as yet been determined. The reaction appears to be due to a chemical modification of the plasma, particularly in the relation of the colloids, an increase in the fibrinogin and serum globulin in relation to the serum albumins. The viscosity of the serum may be greatly altered by the formation of an extremely small amount of fibrin and fibrinogin. The greater tendency to agglutination of erythrocytes in albuminous solutions is a result of diminished negative electric charge of the erythrocytes themselves. This charge is highest in an albumin solution, lower in a globulin solution and lowest in a fibrinogin solution. Solutions of fibrinogin or globulin have a high viscosity, whereas solutions of albumin have a low viscosity. This may explain the relation between high viscosity of the plasma and the increase in the rate of sedimentation. Since the agglutinins carry positive electrical charges an increase will take up the negative charges of the erythrocytes, and the latter, no longer able to repel each other, are clumped together in massive rouleau formation. Another factor that may have had an important bearing on the reaction, may be the antagonism between the lipoid substances, cholesterin and lecithin. By adding cholesterin to the blood, the rate of sedimentation is extremely rapid, while the addition of lecithin causes considerable slowing. It would therefor appear that the changes occurring in the blood may be summed up as follows: In the plasma an increase in the fibrinogin and globulin and a relative decrease in albumin, hence an increase in the viscosity and diminution in the surface tension. In the erythrocytes a diminution in the negative electrical charge, with consequent changes in the surface tension (this depending also on the increased lipoid content of the plasma), and an increase in the viscosity of the erythrocytes.

A study of the literature of both Europe and America has revealed a remarkable uniformity of opinion as to the value of the test. Fahreus, Linzenmeier, Lehman, Geppert, and others in Europe, and Friedlander, Baer and Ries in this country, arrived at results and conclusions that are in fairly close agreement. They have established the test as one that is both reliable and trustworthy and as such can be of inestimable value in the study of the infections. In a very recent article by Cherry, however, the interpretation of the results in a given number of cases were in marked contrast to those of the others. His conclusions differed so radically that one is, at first glance, left in doubt as to the true value of the procedure, and it would appear that a thorough investigation would now have to be instituted in order to *evaluate* the true bearing of the test on the various factors pertaining to pathological conditions. The remarks under discussion in the following are based rather on the investigations of the European and American workers, and an attempt will be made to show wherein Cherry differs in his findings.

The separation of the erythrocytes from the plasma in healthy women should require from five to six hours; that is, in women in whom careful physical examination fails to disclose any pathological condition, the erythrocytes should reach the eighteen m.m. mark in the tube in about that time. It is rarely, if ever, necessary to be placed in a position whereby one is forced to wait that length of time in order to obtain the required information as to what is taking place in a given specimen of blood. Generally three hours are permitted for the lowest normal figures in healthy women, and a rate of sedimentation lower than this should be regarded as indicating an abnormal condition either apparent or concealed.

Much not only interesting and instructive but important as well can be learned from the study and observation of the test in diseased conditions. As an aid to a positive diagnosis the test is rather one of negative value, but in the fields of differential diagnosis and prognosis, and as an indicator for the proper and safe time to employ operative procedures the test is of extreme value, and can be considered reliable if properly interpreted. It should be emphasized that the test may be regarded as accurate only in connection with a careful accurate history, a thorough local and general physical examination and blood examinations. Anemias and cachexias do not permit normal values to supervene. A negative outcome of the test is particularly conclusive in showing that, at the time, no noteworthy inflammatory process is taking place in the body.

All inflammations, regardless of the etiology, cause a decrease in the time of sedimentation proportionate to the gravity of the infection, and the extension of the inflammatory products. Bacterial toxins, and products of protein catabolism accelerate the sedimentation time. Herein lies its great usefulness in gynecological conditions. The more acute the condition the more rapid the rate, less so in subacute, and slow in chronic forms. The presence or absence of an inflammatory process, either primary or secondary, in conjunction with a mass felt in the pelvis, the severity of the infection, the resistance of the patient, the presence or absence of latent infection, the fixed uterus with doubtful conditions present in the adnexæ, and many other factors pertinent to a clear, careful estimation of existing conditions, may be rightly judged and a fairly good understanding of what is going on in the individual patient be determined by means of the study of the test, which is repeated when found necessary.

The less virulent and numerous the bacteria, the less does the sedimentation vary from the normal, until finally it becomes normal, indicating thereby the disappearance of bacteria.

It becomes, thus, of great value in determining the period of safety for operative procedures indicating by its manifestations a safe and sane course to pursue. As a general rule and a safe one to follow it may be stated that any patient in whom the rate of sedimentation is sixty minutes or less is the subject of an acute infection, either local or general, severe enough in its nature definitely to contraindicate intraabdominal operative work, except in cases of ruptured ectopic pregnancy. A rate of one to two hours predicates either an infection that has shot its bolt, a less virulent infection, or a successful attempt on the part of the patient to overcome the condition. At this stage, while it may be reasonably safe, it is nevertheless often inadvisable to enter the abdomen since the pres-

ence of active bacteria is known to exist and a rejuvenation of the infection is not at all unlikely. When the sedimentation time is at the two hour period or over, safety in the employment of surgery is assured and, other factors being equal, the patient can be carried through with confidence.

At this point Cherry differs quite radically. In a series of cases totalling seventy-one in number, twenty-six patients were operated upon with removal of their pelvic lesions the sedimentation time being under thirty minutes. Another group of twenty-nine in whom the sedimentation time was thirty to sixty minutes were also operated upon. In sixteen patients the sedimentation time was sixty to 110 minutes. There was one death in the entire group. One is at a loss to explain the factors underlying the difference between the figures of Cherry and those of the other investigators. A further study of the conditions both external and internal that may have a bearing on the class of patient treated at the Harlem Hospital may be necessary to reconcile these conflicting opinions.

It might be advisable to take up individually the conditions one meets in the every day gynecological practice, correlate the facts influencing the rate of sedimentation and arrive thereby at conclusions that may serve in a practical fashion to assist in the treatment of diseases of the pelvis. The attention of the examining physician should be directed always along the lines of a thorough physical examination to eliminate as far as possible other foci of infection, other acute inflammatory conditions such as in the appendix, gallbladder, and other regions, which in themselves have a decided bearing upon the sedimentation time. Omitting, therefore, from here other fields of medicine, and devoting this short résumé to obstetrical and gynecological conditions, we may find the following:

As an aid in the early diagnosis of pregnancy the test has no value. At the twentieth week of gestation the rate begins to increase, and as the pregnancy advances the rapidity correspondingly increases. The most marked increase manifests itself in the last month when the eighteen mm. point may be reached within thirty minutes. Just before the onset of labor and during labor the rate will be found to be as low as fifteen minutes. It may therefore be possible, if occasion should arise, to predicate the termination of the period of pregnancy and the near approach of labor. An extremely lively rate of sedimentation would warn one that labor is imminent. For the first two or three days following labor the rate remains quite rapid, then rises slowly until the normal rate is reached. The failure of the rate to rise may be a premonitory sign of an impending puerperal infection in the course of development. A continued decrease in the time or the rate would indicate an infection of a severe grade with a prognosis more than likely doubtful. Conversely, a gradual slowing up of the rate means a rapid return to normal. The test, then, may be found to be extremely useful in estimating the prognosis of puerperal infections basing the knowledge of existing conditions relating to the infection on the rise or fall of the sedimentation time. The knowledge gained or to be gained by means of the test is more accurate, and can be recognized much earlier than any gained by observation of the temperature curve and study of the leucocytes.

A rapid sedimentation time in the course of an abortion should call for a careful investigation for either a concomitant infection somewhere in the genital tract, or possibly the onset of an infection incident to the abortion itself. The choice of treatment would depend a great deal upon the rate of sedimentation. A rapid decrease in the rate time would cause one to hesitate to employ intrauterine manipulations until such time is at hand when the rising rate indicates the road to safe and sane procedure. The same holds true in postabortal conditions. The choice of treatment, the reaction of the patient, the ultimate prognosis can be determined, and a fairer knowledge of the condition ascertained by the reading of the sedimentation time.

There is nothing to be expected from the test to guide one in the diagnosis of extrauterine pregnancy. When rupture takes place the rate time rapidly decreases and may often be as low as ten minutes, but the picture of the condition is so classical that the test becomes of little practical value. A slow acceleration of the rate in repeated tests may indicate, in conjunction with other objective findings, a tubal abortion, in which case the slow oozing of blood from the fimbriated end of the tube into the abdominal cavity may influence the rate of sedimentation. The test, however, is invaluable in the differential diagnosis between ectopic pregnancy and diseases of the adnexæ. A correct diagnosis is often beset with many difficulties, and errors are frequently made. Other factors being equal a rapid rate of sedimentation points rather to adnexal conditions. By exclusion a slow rate of sedimentation would tend to confirm a diagnosis of an extrauterine pregnancy.

In uncomplicated pelvic tumors such as myomas or ovarian cysts the rate of sedimentation remains normal. In the presence of acceleration there may be present an anemia from long continued even though slight hemorrhage, and the hemoglobin count may be of aid in determining this factor. Where the presence of extragenital infection can be ruled out a decided acceleration of the rate usually bears evidence that a softening or degeneration is taking place in the tumor, even before any change is noted in the temperature and leucocyte count. With a rapid increase in the rate time the importance of recognizing the cause is apparent. The test therefore becomes of considerable value in determining whether or not a tumor in the pelvis is undorgoing any change that may prove dangerous to the welfare of the patient. It happens occasionally that some difficulty arises in differentiating between pregnancy, fibroid, and ovarian cyst. Given a patient in whom a pelvic tumor is present a decreased rate time would give added evidence that pregnancy is the most logical diagnosis. This decrease in the rate would be gradual and would correspond to the growth of the tumor, while on the other hand a very rapid decrease in the rate time would point rather to a tumor with some complication present or impending. At the Harlem Hospital it was found that fibromyomas give about the same rate as pregnancies do. Considering the population of the Harlem Hospital, the prevalence of latent lues or tuberculous infections, which in themselves give a lively acceleration of the rate, Cherry's figures of twenty-five to seventy minutes for fibroids lend themselves to at least a reasonable doubt unless it be

assured that all extraneous infections can be definitely excluded.

The test finds its greatest usefulness in the evaluation of adnexal conditions. The presence of inflammatory processes, their nature and virulence, and the reaction of the patient to such infection can be determined with a fair degree of certainty by the careful consideration of the test. As an aid in differential diagnosis between adnexal diseases, ectopic gestations and other pelvic masses, the test can be very useful and may serve to render needed help in cases where the question often arises whether or not to operate. While the inadvisability of operating upon acute pelvic infections is not a new thought, many occasions nevertheless arise whereby operation becomes necessary. Our usual custom has been to await such time when the temperature has been normal for several days. We were even then unable to state definitely that a latent infection did not exist especially in those cases that had streptococci or staphylococci as the offending organisms. The sedimentation test may help considerably and a rate of two hours or over prior to operation will give positive proof that bacteria have disappeared, the infection at a standstill, and the patient is a safe operative risk.

In cases of cancer of the uterus the rapidity of the sedimentation constitutes a valuable addition to the diagnostic aids, especially for the recognition of doubtful cancers if it be combined in proper fashion with the blood count and a study of the color index. In cancer of the female genitalia there is constantly a deviation from the normal in the rate which, however, does not always correspond to the extent of the cancer, but is dependent upon the injury to the body as a whole. After radical operation the rate gradually returns to normal. In cases in which palpation indicates freedom from recurrence after operation it is justifiable to doubt the findings if the rate is greatly decreased and other processes which might be responsible for this change can be definitely excluded. The same holds true for cases where the patients have been radiated. Radiation in any form reacts unfavorably upon the test, and a rapid sedimentation is the usual picture following exposure. The rise in the rate is gradual and constant, and any decrease during the course of apparent physical improvement usually means a recurrence even though not discoverable at the time.

The sedimentation test should not replace careful observation of the temperature curve and repeated examination of the leucocytes. Both are valuable aids in studying the character of the conditions present. The test, however, serves the same purpose and has as an advantage the fact that it is often present before any change is noted in the count and gives better and earlier information between resistance on the one hand and virulence on the other. The test also allows of a better interpretation of the prognosis indicating a favorable or unfavorable outcome by its rise or fall, while the count and temperature curve may remain stationary or show little change, Cherry places more reliance in his operative work upon the count of the leucocytes. He divides his cases into two classes—those in which the leucocytosis is 16,000 or under (in which event he has no hesitancy in operating immediately), and those above 16,000 where operation is postponed to meet more favorable conditions. Nevertheless, Cherry, together with all other investigators, concedes that the test is a delicate one, and that it reacts much more quickly than does the increase in the number of leucocytes. When used in conjunction with the careful study of the leucocyte count and the temperature curve, a truer estimate of the nature of the condition, a clearer conception of the pathological condition present, a saner and wiser course to pursue, and a fairer knowledge of the ultimate prognosis will be the result.

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Caffeine in the Breast Milk of Coffee and Tea Drinkers

ROBERT R. IRVIN, Ph.D.*

Pittsburgh, Pa.

The possibility of the excretion of caffeine into human milk from ingested coffee and tea is a question that has received little attention. From the viewpoint of the health of the child, it is obviously important to know whether or not this alkaloid does commonly occur in breast milk. P. B. Hawk (1) and A. L. Benedict (2) have suggested that the alkaloid may be present in the milk of tea and coffee drinking mothers, and thus exert a harmful effect upon the nursing infants. In 1908, C. B. Read (3) made an extensive bibliographic review of the literature on the occurrence of common drugs and chemicals in human milk, but, though a number of the more common alkaloids were discussed in his paper, no mention was made of caffeine. In a recent book (4) on nutrition problems of infancy and childhood by Stafford McLean and Helen L. Fales are also given a number of drugs, including some alkaloids, which have been found in breast milk, but caffeine is not included among those listed.

Because of the apparent lack of experimental data on the question, it seemed to be one worthy of investigation. It is evident, moreover, that the findings of such a study might readily have an important application in the matter of choice of diets for mothers with nursing infants. There is an old belief common among many women that tea drinking stimulates the flow of milk. It is conceivable that such a habit, when carried to excess, might cause the undesired result of drugging the infant.

*Industrial Fellow, Mellon Institute of Industrial Research, University of Pittsburgh, Pittsburgh, Pa.

In order to proceed with an investigation of this problem which I recently carried out, it was necessary first to establish a controlled source of supply of breast milk and to devise a method for the detection of small amounts of caffeine in milk. A suitable supply of human milk was arranged for through the cooperation of a local maternity hospital and later through the Public Health Nursing Association of Pittsburgh.[1] In the course of the development of a method for the detection of caffeine in milk, cow's milk, to which had been added small amounts of the pure alkaloid, was used for experimental study.

METHOD OF ANALYSIS

The preliminary work with cow's milk showed that small quantities of caffeine could be removed from it almost quantitatively and in a nearly pure condition by the following method: The milk was first dried in the presence of twenty per cent. of its weight of magnesium oxide. The resulting powdery mass was extracted with hot water and the aqueous filtrate in turn extracted with chloroform. Upon evaporation of the latter solvent, the caffeine was recovered almost quantitatively and with only a small amount of adhering impurities. For example, a pint of cow's milk to which had been added 0.0050 gram of caffeine, when analyzed by this method, yielded 0.0046 gram of caffeine after the removed alkaloid had been purified by the permanganate method.

For the detection of traces of caffeine in milk, it was learned that the best results were obtained when the dried chloroform extract was sublimed. This procedure was followed throughout in the analysis of human milk. It was found that caffeine could be thus recovered in a very fair state of purity, especially if sublimation was carried out in steps as was done in some of the later tests with human milk.

The formation of characteristic crystals with mercuric chloride was used as a confirmatory test for caffeine. According to this latter test, one drop of a 0.10 per cent. solution of caffeine will form characteristic crystals with the mercuric chloride reagent which can readily be recognized with the aid of low magnification.

EXAMINATION OF BREAST MILK OF COFFEE AND TEA DRINKERS

The breast milk analyzed for caffeine was obtained 1, from a selected group of patients in a maternity hospital, and 2, from an individual (colored, aged twenty-eight years; infant, aged five months) in a private home. From the hospital patients were secured 1,405 grams of milk and from the other source 3,340 grams. The women in the hospital used both tea and coffee. My analysis of these beverages showed that the average daily intake of caffeine was about two grains for each person. The subject outside the hospital drank only coffee, the amount taken varying from three cups a day at the beginning of the experiment to five cups during the last few weeks. The collection of milk from the person who drank only coffee extended over a period of ten weeks. The average cup of coffee as drunk by her contained 0.64 grain of caffeine and the maximum daily intake of the alkaloid was a little over three grains.

[1]This arrangement was made possible through the generous cooperation of Miss Helen A. Bigelow, Director of the Child Welfare Department of the Public Health Nursing Association of Pittsburgh.

From the milk of all the women mentioned above were obtained traces of a substance which had the crystalline form of caffeine and which, moreover, was soluble in both water and chloroform. It could be readily sublimed and deposited on a cold glass slide in the form of fine white needles. In only one instance, however, was a clear cut, positive test obtained with the mercuric chloride reagent. (This positive test was obtained with one lot of milk, about one third of the total, obtained from the subject who drank only coffee). In this case, and in a few other cases also, fractional sublimation was resorted to. It was discovered that cow's milk to which a trace of caffeine had been added would not respond to the mercuric chloride test unless the dried chloroform extract was very carefully sublimed in steps. The indefinite results obtained with this test in the case of other samples of human milk do not necessarily indicate the absence of caffeine, but rather show that traces of impurities were still present which formed insoluble compounds with mercuric chloride, thus making identification of the caffeinelike compound difficult.

Less than a milligram of the crystalline substance described above was obtained from all the human milk examined. Its purification and examination by ordinary chemical means were therefore practically impossible. That the substance was a derivative of caffeine is a possibility that should not be overlooked.

BREAST MILK OF NONCOFFEE DRINKERS

To preclude the possibility that the substance resembling caffeine found in the breast milk of coffee and tea drinkers might be a normal secretory product generally present in human milk, 1,103 grams of milk were obtained from a woman (colored, aged nineteen years; infant, aged two months) who, during the time of milk collection (about one month), used no coffee, tea or other alkaloid containing substance. The total absence of any crystalline substance resembling caffeine in this milk was proved by the method of analysis used in the preceding cases. Sublimation of the chloroform residue produced negative results. It will be recalled that crystals, capable of being sublimed, were always obtained from the milk of coffee or tea drinkers in previous experiments. It is of interest to note that cow's milk is also free from crystalline substance soluble in chloroform.

CONCLUSIONS

1. There has been constantly obtained from the breast milk of coffee and tea drinking mothers a substance possessing the characteristics of caffeine. In crystalline shape, solubility in water and chloroform, and in its capacity to be sublimed, this substance is highly suggestive of caffeine, or possibly a derivative thereof. Since it was found only in traces in human milk its absolute identification was extremely difficult.

2. The caffeinelike crystals just mentioned were found to be absent in the breast milk of a woman who drank no coffee, tea or other alkaloid containing substances.

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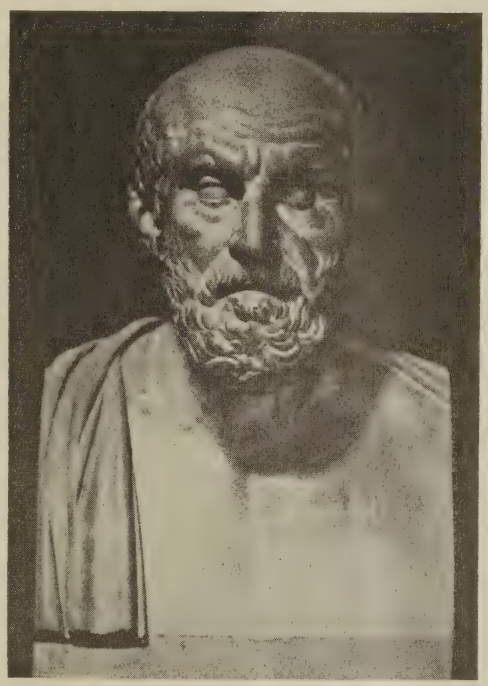
Historical Medicine

The Legacy of Greece to Galen

II. The Roots of Physiology and Etiology

JONATHAN WRIGHT, M.D.
Pleasantville, N. Y.

Although in the previous essay I have perhaps had more to say of Aristotle than of Plato, in reading Galen we soon perceive, as I have also said, he was inspired more by Plato than Aristotle. He places Plato, not Aristotle, side by side with Hippocrates and his instinct, for we scarcely attribute it to his careful study and comparison of his two great predecessors, is quite in accord with the measured judgment of even modern commentators on Aristotle. Ross, the latest editor and historiographer of Aristotle, remarks (1) in his introduction that his thought is colored far more than he knew by that of his predecessors, and above all by Plato, and the commentator says this having well in mind and specifically noting that Aristotle frequently speaks of himself as a Platonist. Gilbert Murray says Aristotle built an altar to Plato. For my purpose it is only necessary to remark that though Plato had a sort of atomic theory of his own in his triangles and their mathematic affinities, he never mentions the theory of Leucippus and Democritus and never mentions the name of the latter at all. Yet he frankly accepts the doctrine of the four elements, not only in the composition of the body, but of the soul. The latter had a large mixture of the divine, which also is indivisible and unchangeable, but in making the soul partake of corporeality and of mortality as well as immortality and incorporeality he recognized it must have an admixture of earth, air, water and fire. As to the mathematics that went with this, to us, strange and quite foreign conception, the figure four plays a large part in his arithmetic (2).



Term of Chrysippus. (Florence, Uffici)
(*After Hekler*)

From Heraclitus we judge he has his predilection for the element fire in the composition of the soul and it is fire among the ancient philosophers which more frequently than air has its suggestion of our late lamented ether. It is the lightest and most mobile. It plays the most prominent part in that ever changing aspect of things which so impressed Heraclitus and so impressed Plato that he made the geometric figure of the universe a sphere and circular motion the divine motion, so it could go on forever. The vortex of Democritus and Anaxagoras was a part of this same thought for it is only a circular motion can be eternal—eternally confined in a universe which had its limits for most of the ancient philosophy as it is beginning to have for modern astronomy, though they have extended the limits of space to figures which to the ordinary mortal are all but infinite. It was the fire penetrated everywhere and it was a circular motion, a spinning ball of a universe which kept going forever. Into how much of all this I may have gone elsewhere I can not be sure, but Robin (3) has much to say of this which is historically suggestive.

It was fire, it was the heat that we find in Aristotle as the motive force, or the agent of the motive force, in the functions of the animal economy and we must keep in mind that fire was an elementary matter or substance like earth and water and air and in most philosophies these were on occasion converted into one another. In Galen (4a) we get a glimpse how water was supposed to be transformed into another socalled element. It became thick and compressed and settled down into solid earth. "It was capable of it and of rising up as frothy air"—at least so I would translate it and the Latin rendering of Kühn does not forbid. How near this was to the thought of the Nature philosophers or whether there was not some further explanation of the process I do not know, but Galen seems to think that sufficient and this he thinks was their conception of the manner of the transformation of other forms into a single elementary matter, which is really the point of interest for us gazing at a distant star and saying there matter is being transformed into heat or energy. That is fire. Then Galen goes on to repeat this in just about the same terms reversed for fire into air and air into water and water settles down into earth. We easily conjecture the mist rising from the sea and the earth emerging from it out of the silt deposit of rivers were the natural phenomena out of which this naïve conception grew, but the point that bids us halt is the point we have reached where matter is transformed into energy. It is fire or Aristotle's internal heat which sets the dervish whirling just as it sets worlds whirling, but we must beware of reading something into the ancient mind which was never

there. We must remember, too, it was Galen's nature to cast ridicule on an argument rather than to seek out the rational basis or the basis of fact on which it rested. He had no conception of the mental dissection that seeks to lay bare the origin of a thought as he laid bare the origin of a monkey's spinal nerve. Bellowing at an opponent was better. Otherwise he would not have exclaimed: "This is the extraordinary trend of their arguments." William James was much amused at the bellowing in the German meetings of science, but he might have found it nearer home, not in the pulpits alone of science but in the conventicles where science is taught from platforms. Seeking truth as Socrates did was a matter of groping, retreating and advancing, always in doubt, never oracular, backing out of one blind alley and skirting another. The smooth pearls of wisdom and the oriental flattery of the modern platform orator of science have no more place in the search of truth than the periods of the eloquence of Gorgias had, in Socrates's view, but bellowing was Galen's way.

It may be thought I have picked up the trail of medical thought as to the roots of disease at some distance from medicine itself. Going back therefore to Galen busy with advanced physics and the borders of metaphysics, we see him at least penetrated by the thought that no one can understand the roots of medicine without dealing with the former.

Although Aristotle is said, erroneously I think, to have been a physician himself, he was undoubtedly the son of a physician. He was a great biologist, the greatest of all of them, modern or ancient, and though his reference to the pathology of disease is negligible, his contributions to anatomy and physiology was so great it seems at first sight singular that Galen, who was not a success as a metaphysician or a theologian, should have placed Plato instead of Aristotle by the side of Hippocrates in the title of his commentaries on the dogmas of the philosophers. It may, as has been suggested for his interest in making *The Nature of Man* a genuine book of the great Hippocrates, have been because in the *Timaeus* Plato makes the elements precisely four in number and the attribute of matter four, the humors four, though on these he lays less stress. But it was these that attracted Galen, obsessed with his pernicious humoral doctrines. It was from the spurious Hippocrates and from Plato, Galen drew these theories which became so hidebound under his hand. Plato was very much more in line with these than Aristotle, but Galen apparently would have nothing to do with Plato's triangles. They were set vibrating by vibrating particles outside of the body and they may have other attributes attractive historically to the modern physicist. There the earth and air particles are set whirling and while they are in a whirl they interpenetrate with others. This sort of movement communicated to the triangular particles within the animal body through the sense organs, of taste specifically, by the path of bloodvessels to the heart or perhaps the brain, give rise to the sensations of pleasure or pain in the centres of the soul or consciousness. This is, as I take it, the doctrine of sense impressions in the *Timaeus* (64-70), but it appears so interlarded with other physiological and psychical matter, as we now apportion it, that it is difficult to extract it from its environment. It was not in accord with the view of Aristotle and Galen and it is not the part of the Platonic theories to which the latter lends his approval, but we can lend a more sympathetic ear to it. Before Plato Empedocles made minute particles play their part in the sense of sight and their beating on the retina is one of the forms of modern views. Plato applied it to the gustatory sense. As to these views, Beare has left others very little to say and they can be better pursued in his masterly book (5).

Starting with the very earliest of man's ideas as to the soul, merged with the idea of life whose seat was in the blood, we find the germs of the theory of the pneuma. It was well to the front before Erasistratus gave it prominence through the observation of the change wrought by the oxygenation of the blood in the lungs. The pneuma or the oxygen traveling everywhere in the bloodvessels of the arterial system and animating and refreshing and nourishing the tissues it would have been strange indeed if its vehicle, the blood, had not itself become the seat of the soul and the mysterious change of its color had not become the link which bound man to the Infinite, but it is astounding to us that Erasistratus thought this activating principle in it traveled in the arteries alone. It is pneuma then, which has something of fire and the ether in its conception that is the ultimate source of the movements of the body. In this dilemma Galen says (4b) even Diogenes Apollonius, the champion of air as the monistic element forgets himself and agrees with Empedocles and Kritias that the blood is the source of life. They were both of them Silicians, to whom Plato owed so much in philosophy and religion and from whom he suffered so much in politics. They, Galen declares, believed the blood is the soul, while Cleanthes and Chrysippus and Zeno were of the opinion it nourished the soul. The latter is the natural development of Platonic philosophic thought. We see therefore these two fundamental theories, each having its origin in primitive thought are the roots of ancient medical physiology which intertwine not alone at their origin in the mind of primitive man, but in the minds of Greek thinkers, who accumulated a legacy for Galen.

Very much the largest amount of the talk about the pneuma and the soul in the medicine before Galen was in the shelter of the ignorance of the functions of the brain and of the lack of differentiation between the nerves and the fibrous structures of the body. Herophilus and Eudemus (4c) first, long after Aristotle, gave a full exposition of the true nature of these, but we may find even Aristotle saying there were those who believe the brain was the source of life and movement and some that it is the heart. He partook of the latter opinion and we may trace this thought to that of the pneuma in the blood animating and nourishing the body. It dominated thought for six or seven hundred years after Alcmaeon is said to have traced the cerebral nerves to their origin, during which time Plato advanced far enough to make the brain the seat of the noblest division of his tripartite soul. In the *Sacred Disease* we find the function of the brain recognized, but in the more genuine and earlier books of the Hippocratic Corpus that is not the case, so far as I remember. Until the nerves were differentiated and their function demonstrated the brain theory must have remained in the greatest obscurity and doubt and disbelief.

It is not clear at all how much research work was done before Galen on the nerves and bloodvessels and especially as to the physiologyy of the latter. It is evident a great deal had been done before him at Alexandria as to their anatomy, but how much had been done to bring the physiology into some kind of harmony with it is far from clear. Aretaeus so well understood it he made a correct diagnosis of the lesion in cerebral apoplexy. Archigines lived before Galen, probably in the reign of Trajan. His pneumatic theories Galen attacked, but Aretaeus shared them fully and him Galen does not mention nor does Aretaeus mention Galen, although they were evidently contemporaries and both Asiatics by birth. Aretaeus was the Cappadocian and Galen was born in the neighboring province of Bithynia, though the maps leave us in doubt as to their contiguity. Galen traveled much in the eastern Mediterranean, even when he resided and practised at Rome. It is difficult to believe they did not know of one another. It is still more astonishing there is hardly any contemporary mention of Galen. There is a doubtful one referring to him as the Mule Head of debate by Apollonius Aphrodisiensis, I believe, and a distinctly eulogistic mention of him by Athenaeus of Naucratis (6), but it is not certain when the latter lived. At least it was long before Oribasius, who does not especially distinguish him in his collection made for the Emperor Julian. However, he is not backward in blowing his own trumpet, and we know very specifically about him from his own words. If all he tells of his own work is true, if none had before him done what he did to elucidate the functions of the nerves and bloodvessels of the body he was by far the greatest experimentalist and medical researcher who ever lived. He did enough forever to banish the misty talk about the soul and the pneuma being the cause of the body movement, but we will go far astray in the history of thought unless we recognize the grain of truth in regard to the pneuma and acknowledge the mysterious link materialism has with the discourse of Plato on the soul.

I have heretofore been interested here to show Galen's reaction to the dogmas of Plato and Aristotle as to the elementary philosophy which was the foundation of his medical theories. He did battle with those of Aristotle, he evaded those of Plato as much as possible where his materialism compelled him to do so, but in his worship of Hippocrates he seems on occasion to have supplied him with ideas he apparently never had. Aristotle, but especially the Stoics and Peripatetics (4d) and especially among them, Chrysippus, are usually in the wrong and Plato usually in the right and Hippocrates always so. According to Hippocrates the heart is the origin of the pneuma and the source of the blood and "although Hippocrates talks like a physician and Plato like a philosopher, they are in virtual agreement"—about something which we can only look on now as mere verbiage, but by which Galen, though having his doubts, was greatly influenced. He did not in our view at all act up to his principles. "A reasonable argument is one based on facts," but even we, matter of fact generation as we profess to be, have to admit a good deal of unreasonable argument is based on it too. Emotion stirs the heart and bilious people are apt to be hypochondriacal and irritable, but generosity dwells in the heart and evil dwells in the liver. That the soul dwells in the choroid plexus and the ventricles of the brain may be talking like an ancient philosopher whose thoughts we can perhaps trace, but that is not the way the modern philosopher bases a reasonable argument on fact. Galen was disposed to admit all these arguments for the tripartite soul when he talks like a physician, but in various other passages he is censorious of the ways both philosophers and physicians use words.

Chrysippus is only following Aristotle in the ridiculous account Galen gives of him. Aristotle, too, is much concerned about the loose application of words. The trouble was not so much with this or rather this was apparently secondary to the loose thinking and that Aristotle more than any man in the world did most in an attempt to correct and he was born when in this respect he was needed the most, but his efforts were not crowned with success, so far as we can judge from Galen's accounts of his followers. It was unfortunate for straight thinking and acute analyses that Aristotle came at the end of the glory of Athens. His own language has been the despair of a thousand commentators and translators, yet through it all shines the intellect of the man who scarcely less than his great master bequeathed to Galen his legacy, but great minds are impotent in the face of cosmic change.

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Dr. Dubuisson and the Conspiracy of General Malet.—With the aid of documents for the most part unedited, Commandant Sérignan, formerly professor of history at Saint-Cyr, has brought to life the conspiracy organized and carried out in 1812 by General Malet against Napoleon.

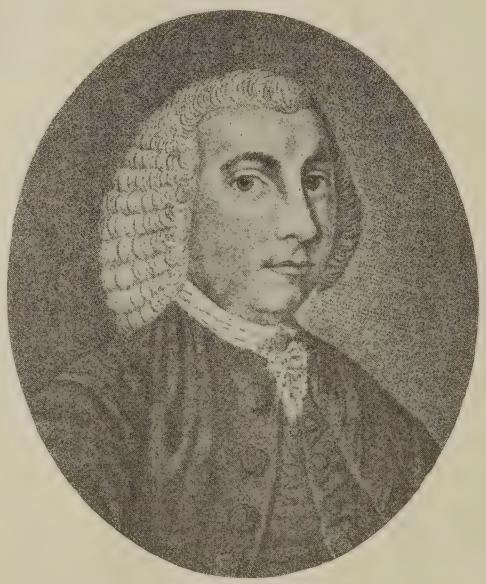
This prisoner of state, incarcerated for years with no communication from outside and without accomplices, escaping from jail by a window, essaying to destroy the power, then at its height, of Napoleon, the power of a prince armed with large and a formidable police force, and succeeding for the moment in his daredevil enterprise; such is in a few words the most extraordinary attempt at insurrection, and the most audacious, that history has ever known. It was on the night of October 23-24, 1812, that General Malet made his tentative *coup d'état.* Incarcerated because of his republican principles, Malet obtained a transfer for himself from Sainte-Pélagie to the sanitarium of Dr. Dubuisson, which he entered on January 10, 1810. The surveillance here was practically nil and Malet was able to prepare his attempt at his leisure.—*Æsculape.*

Contributors to the Science of Medicine

Tobias Smollett

As a contributor to the science of medicine Tobias Smollett should find no place here, but as a man who illumined the name of doctor by his great literary gifts he deserves a place in a list of great men of any age. The career of Rabelais has been given, so why not that of Smollett.

He was born near Cameron on the banks of the river Leven in Scotland, in 1720. He received a good classical education and was taught medicine and surgery in the manner customary at the time. After qualifying he became a ship's surgeon, or surgeon's mate, in the British Navy, and was present at the siege of Carthagena. In his novel, *Roderick Random,* he has given a stirring account of this expedition. In 1756 he is supposed to have been the editor of *A Compendium of Authentic Voyages,* published in seven volumes, among which is contained a short narrative of the expedition to Carthagena in 1741, which is splenetic and spicy as most of his writings are.



TOBIAS SMOLLETT, M.D.

He did not stay at sea for long, and no doubt wrote many things before he became known as a literary star. In 1746 he published *A Satire in Two Parts.* At eighteen he had written a tragedy, *The Regicide,* founded on the story of the assassination of James I of Scotland. This he published by subscription in 1749 with a preface in which he inveighs bitterly against false patrons, and the duplicity of theatrical managers. Iu 1757 his comedy of the *Reprisals,* an afterpiece of two acts, which he had written some years before, was performed in the Drury Lane Theatre. He had also prepared an opera entitled *Alceste,* which has never been put on the stage nor printed. Handel composed the music for it but finding that no use was to be made of it afterwards adapted it to Dryden's Lesser Ode for St. Cecilia's Day.

So much for his dramatic works which brought him little fame. It is his works of fiction on which his fame rests and it is now generally acknowledged that he was a very great novelist, one of the greatest in his own particular line. In 1745 he published *Roderick Random* and leapt at once into fame. It is one of the great novels of the English language. In 1751 *Peregrine Pickle* appeared, a novel of lesser calibre, but one well worthy of Smollett's genius. This novel is marked by two striking episodes. The first tells of the adventures of a lady of rank whose name was well known. The other describes an entertainment given by a republican doctor, after the manner of the ancients. The doctor caricatured was supposed to be Dr. Mark Akenside of Newcastle, who made a considerable reputation as a poet. Profound learning and genuine humor predominate in this episode. It may be said that Smollett was learned and endowed with humor which was frequently of a sarcastic, sometimes of a sardonic, nature. In 1754 was published *Ferdinand Count Fathom;* in 1762 *Sir Launcelot Greaves,* and in 1771 *Humphry Clinker.*

Before he took a house at Chelsea, he attempted to practise as a physician at Bath, and with this end in view published a treatise upon the waters of Bath. However, as he did not succeed in practice he abandoned once and for all the medical profession and devoted himself to literature as a means of livelihood. He translated *Gil Blas* and *Don Quixote,* the latter was published in 1755, and after his death a translation of *Telemachus* by him appeared. His name also is appended to a translation of the prose works of Voltaire. In 1757 he published a *History of England* and was employed during the last years of his life in preparing a new edition of *The Ancient and Modern Universal History.* He wrote some part of this himself, the histories of France, Italy and Germany, in particular.

In 1755 he set on foot the *Critical Review* and continued as manager of it until he went abroad for the first time in 1763. This publication involved him in several controversies and law suits, the most important of which was occasioned by his remarks on a pamphlet of Admiral Knowles, the commander of the ill fated expedition to Rochfort, in defense of his conduct of it. The admiral prosecuted Smollet for libel which ended in his being fined one hundred pounds and condemned to three months' imprisonment. As the author of the *Review,* he was frequently censured on account of articles which appeared therein and in which he had no concern.

Smollett also supported Lord Bute, who was the court favorite of the day and who was supposed to have the reins of government in his hands. Smollett published *The Briton* in support of one of the weakest men who ever received the favor of a king and also wrote other pieces in support of the same cause. By the irony of fate he received no profit from these writings. However, Smollett was not the only great man who had to prostitute his genius to mean aims in those times. An author without money was compelled to seek the patronage of a titled mediocrity

who basked in the reflected glory. Moreover, like Samuel Johnson, Smollett, of an independent proud spirit, was ill fitted to lick the shoes of such as the Marquis of Bute and accordingly he was in hot water continually and never succeeded in a material way. His pecuniary and other difficulties reacted on him and rendered a somewhat spiteful wit and humor more biting.

As said before, he went abroad in 1763 as his health was bad, and resided for two years in France and Italy. He published an account of his sojourn in these countries in 1766, in them displaying to the full extent his splenetic humor. However, as his health continued to fail after his return to England, he went back to Italy where he died on October 21, 1771.

Smollett was one of those learned men of genuis, whom Pierius Valerianus would have included in his book *De Infelicitate Literatorum*. At his best he was a writer of the highest genius and although neglected during his life has been so acclaimed by posterity. His remarkable powers and attainments never gained him higher patrons than booksellers, with the exception of the despicable Marquis of Bute. In order to live he had to waste his talents on hack writing. One of his biographers attributes his lack of success to a certain "loftiness and elevation of sentiment and character which he possessed" and, as the biographer justly adds, are but poor qualifications for "currying favor with those who are able to confer favors." He met many mortifications and disappointments. He said in a letter to his friend, David Garrick, the great actor, "I am old enough to have seen and observed that we are all playthings of fortune, and that it depends upon something as insignificant and precarious as the tossing up of a halfpenny, whether a man rises to affluence and honors, or continues to his dying day struggling with the difficulties and disgraces of life."

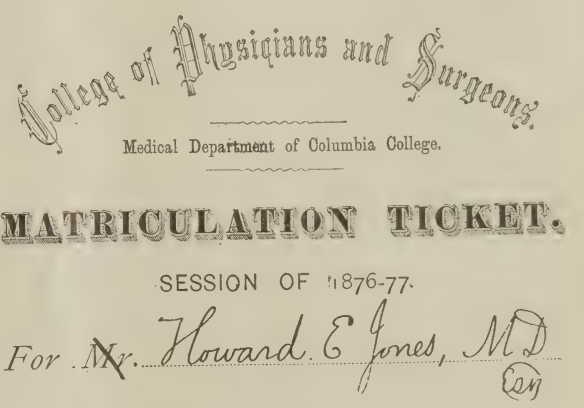
With these difficulties and disgraces he had to struggle throughout his life. Smollett is now regarded as one of the brightest lights of English fiction. *Roderick Random* is the finest novel of its kind written and should be read by medical men if only for the graphic pen pictures of the life of a surgeon of a man of war of that period. Smollett by his genius added lustre to the name of doctor and in company with that even greater genius. Rabelais who also was a physician and whose career has been commemorated in these pages, his fame will endure.

Graduate Study in New York in 1876

Some interesting items related to graduate study in medicine in New York City about the year 1876 have been very kindly contributed by Dr. Howard Jones, of Circleville, Ohio, after reading the article on the Early Years of the New York Post Graduate School and Hospital, by Dr. Henry Dwight Chapin, which appeared in this Journal.

Dr. Jones writes that he was graduated from the Ohio Medical College in the spring of 1876, then went to New York and matriculated in the College of Physicians and Surgeons and the University Medical School. His diploma gave him matriculation at a nominal cost in both these schools, and he was admitted to the lectures by a ticket, which he has preserved. Here the student had the choice of instruction under such teachers as he chose. Before the autumn of 1876 had passed, private classes were organized under an agreement between the same men who later organized the Post Graduate School, and it was then discussed as one of the future possibilities of medical instruction in New York City. These men issued tickets to their clinical lectures, which were then given, according to Dr. Janes, at the Demilt Dispensary or at the private offices of the various physicians. This lecture course continued for a certain number of weeks throughout the winter, at a cost to each student of about $15 to $20 a week.

Dr. Jones tells us that quite a number of western boys with degrees availed themselves of these courses, as many as fifteen when he was in New York. Among the instructors were Dr. D. B. St. John Roosa, Dr. L. Duncan Bulkley, Dr. Hanks, Dr. Thomas E. Satterthwaite in microscopical pathology, and Dr. Louis Sayer in plaster work for orthopedic cases. These men all issued tickets admitting the bearer to their lectures. Dr. Satterthwaite used his personal card instead of a printed ticket. Dr. Jones has kept these tickets, signed by the lecturers and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MATRICULATION TICKET.

SESSION OF 1876-77.

For Mr. Howard E. Jones, M.D.

filled out for October to December, 1876, representing the first effort at a postgraduate course made by these men.

INSTRUCTION IN DERMATOLOGY.

Admit Mr. Howard E. Jones M.D.

to one Course of Clinical Lectures on

DISEASES OF THE SKIN,

From Oct 31 1876 to Dec 31 1876

L. D. Bulkley

New York, Oct 31 1876

Editorial Articles

LAWS; HUMAN AND DIVINE

There are laws of health, but they are not human laws nor are we always sure that we know these laws when we think we do. Human laws of health turn out to be very troublesome when it is found that they do not correspond with the real thing. We all mouth these laws occasionally as suits our purpose, but it is those which get themselves written down in the statutes that prove most disastrous, since they cannot be repealed without considerable cranking of the cumbersome machinery of legislation.

Just at present it is the human law on ventilation, especially ventilation of school buildings, which is proving troublesome. Within a couple of decades twenty or more state legislatures or state departments of education have ruled that thirty cubic feet of air must be delivered to each school child ever minute, for it was the teaching of the science of the time in which these laws were formulated that such were the needs for health. A newer science which knows not the god (or devil) of carbon dioxide and other deleterious agencies in the air, lays down the new law that forced ventilation is not needed nor so good as the opening of windows over radiators. If this is Nature's law of healthy air for schools it is now impossible for superintendents of schools in these twenty states to fulfil this law, since they are compelled by the existing human ordinances to insert machinery for producing forced draft.

If the new method of ventilation is sufficient, there is a saving in fuel of some thirty per cent. and there is also a considerable saving in building costs if the forced draft machinery is omitted in the construction. It would seem simple enough to have the old human laws revised to conform to these new human laws, but, unfortunately, the former have become intrenched in human self interest involved in the making of various patent systems for the delivery of the thirty feet of fresh air per minute. It will be much more difficult to secure the repeal of these ventilation laws than it was to secure their passage, even though the former would prove a matter of much public economy.

The moral would seem to be to get along with as few and as general human laws as possible in order that we may readily adjust to the better knowledge we may possibly and probably acquire of Nature's requirements.

While it would seem that, aside from comfort (which, according to recent studies, is about all that is needed in ventilation), the air of a room should be kept as pure as possible, so far as the machinery of forced draft is concerned it seldom works as it is supposed to work and the human law is not fulfilled. Moreover, the machinery of forced draft is rarely operated out of the season for heating. In other words, it is noneffective save in those months when the rooms must be heated. So far as illness of school children is concerned these are by far the healthiest months of the year. In the experiments of the New York State Commission on Ventilation, carried on over eight weeks in the late winter months, there was an average of eighteen per cent. more absence due to respiratory illness and seventy per cent. more illness among those in attendance in the fan ventilated schools than in those with open windows only.

After all, open window ventilation would seem to be Nature's ventilation, for it is only man who huddles together indoors in large groups, only man who heats his houses, only man who has invented machinery for forced draft, and only man who formulates laws of health.

TRUSTY PHYSICIANS

"I would like to have an annual physical examination if I only could trust the physician, but, from my experience, they don't know how to examine." Such is the delivery of a very intelligent layman with regard to examinations "on your birthday." In this man's estimate thoroughness and knowledge are expected from the physician and he is suspicious of one who does not exhibit them, and, unfortunately, he finds the knowing and thorough doctor a scarce article.

It is not more than we would expect, however, since it has not been very long since the whole teaching of physical examination was the exploration of organs (heart and lungs) of which perhaps least can be learned, save where they are damaged beyond any possibility of repair, while an investigation into habits of living is well nigh foreign to medical reckoning.

If the physician would only use his eyes and his ears and his knowledge, he could usually be trusted. A child not recovered from measles manifests a fever. The parent is told by the family doctor that the child has "liver trouble caused by a poisoned lollypop," although this physician is perfectly aware that hundreds of other children have been sucking the same lollypops without "liver trouble" or fever. It was so much easier to give this preposterous but

untrustworthy explanation than to examine the chest where the trouble was later found. The questions asked by parents and friends are often troublesome to answer, but they deserve a trustworthy answer founded on the best knowledge obtainable.

If the nature of the medical student has not materially changed of late years, and it probably has not, a large percentage of it is hoping to excel in the daring art of surgery, or, failing that, to fall into the easy task of writing prescriptions. We wonder how many will be fitted by inclination for making valuable health examinations and whether it may not be well to train in our medical schools a select group of students along these special lines. At any rate, those who have the courage to plan to be general practitioners deserve to have special training along such lines, as fundamental to their future work, since the public is being educated to desire annual examinations.

It would not be an easy specialty, this of the annual examination, and, therefore, should encourage the student, for it would enlist all the knowledge and skill now procurable from the medical curriculum and experience. Our tests of organic condition should be of the most refined order, for they are gross enough at best. Tests of hygienic practice need not be so difficult to study, but they, too, need detailed study. The matter of diet, which comes first in importance, cannot be settled by inquiring as to how many meals a man eats. Indeed, the physician who can be "trusted" fully to examine and advise in hygiene must be not only well schooled but wise, for our ever fickle science must be well larded with common sense if we are not to prove blind (or very nearsighted) leaders of those who suffer from defective vision in this matter of healthy living.

RADIUM IN THE TREATMENT OF NONMALIGNANT DISEASES

Radium and x rays have had a fair amount of success in the treatment of malignant diseases, but the histological effects of radium require a great deal more close study and probably, until more coordinated efforts have been established successfully to bring about a standard technic, it would be unwise to speak in any way dogmatically on the subject. Ignorance as to the rationale of radium treatment needs to be more fully removed. However, progress is being made in this direction and it is to be hoped that scientific investigation on a much wider scale than is now the case may in time clear up most of the obscure points and teach with more or less precision the exact value of radium in the treatment of malignant disease.

In the radium treatment of certain nonmalignant diseases and conditions, reports are encouraging. For instance, the latest report of the British Medical Research Council on the medical uses of radium, being a summary of reports from research centres in Great Britain and Ireland for 1924, affords ground for hope that with the gathering of further knowledge radium may be found to be a factor of the first importance in the treatment of certain malignant and nonmalignant diseases and conditions.

The report in question in discussing the radium treatment of nonmalignant diseases is concerned for the most part with gynecological conditions and diseases of the blood.

So far as gynecological conditions are concerned, from the data contained in the reports the committee is convinced that radium is completely efficient in creating an artificial menopause or cutting short a prolonged and abnormal climacteric. The minimum dose which has produced the desired result would seem to be about thirty-five milligrams of radium element used for twenty-four hours, but the usual dose, and more certain in its results, is seventy milligrams of radium element in the body of the uterus for twenty-four hours. It is noted with interest by the committee that at one hospital it is used as a routine method in such cases. They do not feel, therefore, that there is any need for further research where an absolute cessation of menstruation is aimed at. They feel that more research work might profitably be carried out on patients between the ages of twenty-five and forty suffering from intractable hemorrhage, and in which it is desirable to control the hemorrhage by small doses without causing a premature menopause. The reports on fibroids suggest that for the treatment of small fibroids giving rise to menorrhagia, radium treatment is of great value, but generally causes an artificial menopause, and in a few cases the fibroids diminish in size.

Finally it is suggested that more work might be carried out on patients suffering from chronic cervicitis to find out whether it is possible to destroy the mucous glands of the cervix without at the same time destroying the ovaries and producing an artificial climacteric.

With regard to the use of radium in the treatment of blood diseases it is reported from the Royal Infirmary of Aberdeen that in six out of seven cases of myeloid leucemia treated by the external application of radium either to the spleen or to the long bones, there was considerable improvement in the condition. In some cases a quick and very pronounced fall in the numbers of circulating leucocytes occurred. In others this diminution was spread over a period of many months. Though these patients have undoubtedly been greatly benefited by the radia-

tion treatment, no essentially new facts have been brought to light by these therapeutic measures.

On the whole, then, it may be said again that the report is encouraging but that there is much to learn concerning radium before its value as a therapeutic agent can be fully assessed, and particularly should its histological effects be studied with the utmost attention.

THE BLOOD, LYMPH, AND INTERSTITIAL FLUIDS IN CANCER

At its onset, cancer—a local process—exercises no influence over the figured elements of the blood, and it is only when the neoplasm has undergone necrosis or infection that the blood formula becomes variously changed according to these complications. The influence of cancer is manifest in the blood serum at the beginning of the precancerous phase, as has been recently experimentally proved. At the onset of the process both physical and chemical procedures detect changes in the serum. Electrophoresis gives a greater precipitate than normal at the positive electrode; a solution of tannin gives rise to a larger precipitate in the serum of a cancerized animal than in that of the control, the colorimetric procedure with tyrosinase paracresol reveals abnormal quantities of aminoacids and amines.

At the onset or at the phase of full development the serum of cancer subjects gives reactions similar to the preceding ones, but varying in intensity. The degree of intensity varies not only with the phase of evolution, but with the nature of the neoplasm and therapeutic measures employed.

Neoplasms with a slow evolution give mildly positive reactions, while those with rapid evolution and untreated give strongly positive reactions. Reactions intermediary to these are noted in improved cancer cases. When the neoplasm has to be thoroughly removed surgically the reactions become negative in from one to four weeks and in subjects treated only with intravenous injections of autoserum charged with radium emanations, negative reactions ensue in from one to two weeks after treatment.

Chemical analysis of the serum of cancerous subjects has revealed certain data of frequency that are worthy of attention. There is an increase of the globulins and aminoacids of potassium in rapidly growing tumors, as well as calcium in slowly growing neoplasms.

As yet no specific substances have been detected in the serum of cancerous subjects, only differences in quantity and physicochemical changes of substances normally present. In all these researches one is dealing with general biological facts observed in all cases of intense cell destruction.

AN AFRICAN EXPEDITION

A Harvard Expedition has just started for Africa, headed by Dr. Richard P. Strong, professor of tropical medicine, Harvard University, with the following staff: Dr. George C. Shattuck, assistant professor of tropical medicine; Dr. Joseph Bequaert, assistant professor of entomology; Dr. Glover Allen, lecturer on zoology in the Museum of Comparative Zoology; Dr. Max Theiler, instructor in tropical medicine; Dr. David H. Linder, botanist; Loring Whitman, medical student and photographer, and Harold J. Coolidge, Jr., zoologist.

After completing equipment and arrangements at London and Brussels the party will go first to Liberia, medically a *terra incognita,* to make a medical survey which may have important practical bearing, inasmuch as American interests are starting rubber culture on a large scale to free themselves from British monopoly.

Liberia is about the size of Ohio. The Afro-American population is practically limited to a twenty mile strip along parts of the coast. The interior seems to have a considerable population, and from this the labor on the rubber plantations is recruited. The men come down in parties, work for sixty days at a franc a day, and then return. It is stated that some so enjoy the high wages, change of scene and good treatment, that they escape on the return journey and go back to work. Although it seems a well watered country the natives travel only by land. Dr. Strong plans to employ porters, many of whom will be needed for the transport of the scientific instruments, etc., in order to penetrate the interior over as wide an area as possible, making a general survey of human, animal, plant, and insect life. As far as is known the country rises nowhere more than a few thousand feet. So little is known, that on the United States Government map prepared during the late war, several regions are labelled "Cannibal." From Liberia it is planned to ship to and ascend the Congo to its source in or near Lake Tanganyika. Somewhere in this region Dr. Strong plans to study especially, tropical nonmalarial splenomegaly so rife in his experience in the Philippines and Amazonia, and to unravel its origin and meaning; lymph gland enlargement said to be common here, but of, at least, uncertain origin, and to try a new French remedy for sleeping sickness, having been plentifully supplied with it by its originator.

The next leg of the trip, exclusively by leg, goes to Nairobi; the last leg by rail is to Mombasa. The equatorial belt of Africa will thus be traversed. There is of course a considerable factor of uncertainty hanging over such an expedition. After getting on the ground it may be necessary or advisable to modify or change preliminary plans. It is reasonable to hope that such a well manned expedition may result in notable additions to science. The members of the expedition are masters in their several lines of work. They are well equipped and enthusiastic over the adventure. Nine to twelve months are allowed for the trip which holds out high hopes of real contribution to science. It is financed from the modest funds of the Department of Tropical Medicine of the Harvard Medical School, eked out by aid from sympathetic friends.

Obituary.

JOHN HOWLAND, M.D.

Baltimore

Dr. John Howland, one of the world's leading authorities on the subject of pediatrics, died on June 20th following an operation in London. Dr. Howland was professor of pediatrics at the Johns Hopkins Medical School and chief pediatrist to the Johns Hopkins Hospital. He was perhaps most renowned for his work with rickets in children and his demonstration by the cure of many whom he treated that codliver oil and proper diet were the basis of such therapy. His work with other diseases of children, among them tetany and acidosis, was also well known. He was a collaborator of Dr. Emmet Holt in writing one of the standard textbooks in pediatrics, *The Diseases of Infancy and Childhood.*

Dr. Howland was born on February 3, 1873, in New York City, the son of Judge Henry E. Howland. He was graduated from Yale University in 1897, and at once took up practice in New York. In addition to his private practice he served as physician to Willard Parker Hospital and to Saint Vincent's Hospital, as well as pathologist to the Foundling Hospital. In 1911 he was appointed professor of pediatrics at Washington University, St. Louis, where he served until the next year, when he assumed his position at Johns Hopkins.

Dr. Howland was known not only as a great physician, but also as a great man. His interests were wide and varied, but, next to his work, he devoted much of his time to the study of American history. In 1925, together with a brother and sister, he presented to his university, Yale, a fine collection of daguerreotypes of famous characters in the history of the United States during the 1840's, a collection which was begun by his father who was also a graduate of Yale University.

Dr. Howland's genial nature and pleasing personality won for him numerous friends.

CARLOS F. MacDONALD, M.D.

New York

Dr. Carlos Frederick MacDonald, an eminent physician and psychiatrist of international reputation, died at his residence in Central Valley, Orange County, New York, on May 29, 1926, in his eighty-first year. He was born at Niles, Trumbull County, Ohio, August 29, 1845, the son of John and Caroline (Barber) MacDonald, and grandson of Angus MacDonald, of the famous Clan MacDonald of Scotland.

At the age of sixteen he enlisted in the Sixth Ohio Volunteer Cavalry, and served until the end of the war, being under fire for the last time at Lee's surrender at Appomattox. He fought in most of the principal battles of the Civil War. After the Civil War he studied medicine, and graduated from Bellevue Hospital Medical College in 1869. Shortly after his graduation he became assistant physician to Kings County Hospital, and visiting physician to the Kings County Smallpox Hospital and Almshouse. He was connected with the Kings County Lunatic Asylum for several years.

He was medical superintendent of the State Hospital for insane criminals at Auburn from 1876 to 1879, when he was appointed superintendent of the Binghamton State Hospital, resigning in 1881, whereupon he was reappointed to the superintendency of the Auburn State Hospital. Here, in the year 1879, he abolished the use of mechanical restraint in the treatment of the insane, this being the first instance in this country of the absolute disuse of such restraint in a hospital for the insane.

In 1889 he was appointed, by Governor Hill, president of the State Commission in Lunacy, now the State Hospital Commission.

He was professor of mental diseases in Bellevue Hospital Medical College from 1887 to 1898, professor of mental and medical jurisprudence in the New York University and Bellevue Medical College from 1898 to 1906, since which time he had been professor emeritus. He was lecturer on insanity in the Albany Medical College in 1902, and fourth consulting physician of the Manhattan State Hospital for the Insane, and consulting alienist to the Hackensack Hospital.

He was dean of that branch of his profession involving mental diseases, and has been associated, as an expert witness or consultant, with almost every important case of that character in this country during the past decade.

SIR JAMES CANTLIE, M.B., C.M.,

London

Sir James Cantlie, who died in a London nursing home on May 28, 1926, at the age of seventy-five, did great work for tropical medicine and for first aid for the sick and wounded.

He was born at Dufftown, Banffshire, Scotland, in 1851. He received a part of his medical education at Aberdeen University and a part at Charing Cross Hospital, where he gained an intimate knowledge of anatomy and surgery which stood him in good stead during his life in the Far East. In 1877 he paid his first visit to China, becoming one of the founders of the College of Medicine in Hong Kong of which he was dean for a period of seven years. He then became a friend of the man who turned the government of China from an autocracy to a republic. Sun Yat Sen, the man in question, was a pupil of Cantlie at the Hong Kong College. Cantlie and Manson were the means of rescuing Sen from imprisonment in the Chinese legation in London.

In 1883 Cantlie joined the Egyptian Cholera Expedition and after his return to London became surgeon to the hospital at the Royal Albert Docks. He was largely instrumental in founding the Society of Tropical Medicine and Hygiene over which he presided for three years, and he founded in 1898 the *Journal of Tropical Medicine,* of which he was joint editor. He was a large contributor to medical science in the direction of writing, chiefly on tropical medicine and surgery.

From 1885 to 1888 he commanded the Volunteer Medical Staff Corps in London, and in 1914 he founded the College of Ambulance in London. Cantlie was a many sided man and of an adventurous spirit.

Proposed Building for the Psychiatric Institute

New York State Psychiatric Institute and Hospital

SULLIVAN W. JONES, State Architect
New York

The award of contracts for the New York State Psychiatric Institute and Hospital at Riverside Drive and 168th Street, New York, which will function as a part of the Medical Centre, brings to a successful conclusion thirty years of effort by the State Hospital Commission to provide adequate facilities for research into the nature and causes of mental disease and for instruction in the treatment and care of mental disorders. It is made possible at this time through the interest of Governor Smith in the State hospital system. His dramatization of the issue resulted in the adoption of the fifty million dollar bond issue for new hospital construction.

That it should have taken so many years to convince the public and the Legislature of the need of such an institution is not strange when it is realized that it is not much more than a century ago that mental disorder was first recognized as a disease susceptible of scientific treatment.

Under the State Care Act passed in 1890 as a result of a campaign conducted by the New York State Medical Society and the State Charities Aid Association, the State of New York assumed obligation for the care and treatment of the insane and so brought to an end the inhuman custody of these unfortunates in jails, and in county and municipal asylums and almshouses. The last county institution was taken over by the State in 1896, when the State Care Act, passed six years previously, became effective.

The cost to the State of maintaining its system of hospitals for the treatment and care of the insane has increased year after year until today the annual budget, not including the cost of construction, is more than seventeen million dollars. The patient population of the State hospitals has increased from twenty-five thousand to forty-two thousand in the last twenty years and is now increasing at the rate of more than nine hundred a year. Over eight thousand doctors, nurses and attendants are employed by the State in the operation of its fourteen hospitals.

In providing accommodations for this constantly growing patient population the State has fallen far behind in satisfying requirements. In 1924, when the bond issue for new construction at State hospitals and charitable institutions was authorized, there were nearly nine thousand more patients in the State hospitals than there should have been. This condition of grave overcrowding was brought forcibly to the attention of the public as the result of the disastrous fire at Manhattan State Hospital on Ward's Island in February, 1923, when twenty-three patients lost their lives. In the fall of that year the bond issue for new construction was approved by an overwhelming majority by the voters of the State.

In the building program made possible by this bond issue it was natural that the Psychiatric Institute should receive early consideration. Of all the millions made available for medical research by private philanthrophy in this State, not one dollar has been expended for studies designed primarily to throw light on the obscure problems of mental disease. Apparently the State must foster psychiatric research or psychiatric research will not be undertaken at all. It is a most unfortunate circumstance that study of mental disease, because of the State's interest in that branch of medicine, should be in a sense discriminated against by those in a position to lend support to original investigations and scientific studies in this field.

Almost from the beginning of the modernization of the New York State Hospitals twenty-five years ago it was recognized that a central research and teaching department was urgently needed and formed an essential link in the state hospital system. Accordingly, there was first established the Pathological Institute, which later became the Psychiatric Institute, and was moved to Ward's Island where access to Manhattan State Hospital was possible. The provisions actually made for carrying on the scientific work were meagre and inadequate, however. To give the needed facilities for intensive study, research and education is the primary object of the new Psychiatric Institute and Hospital.

The plans provide for a fireproof hospital and outpatient clinic eleven stories high surmounted by a nine story tower that will accommodate the laboratory and research departments of the institution. The utilization of the site at 168th Street and Riverside Drive required considerable architectural ingenuity. At this point there is a difference of a hundred feet between the Broadway and Riverside Drive levels. The hospital is to be built against this embankment. Its main entrance will be on the tenth floor, facing Broadway and assuring easy access to the other buildings of the Medical Centre as well as the subway and street car lines. Entering the building at this point one will find elevators descending to the hospital floors below or ascending to the laboratory floors above. A ramp from Haven Avenue will permit ambulances to discharge their patients at the eighth floor. A separate entrance is provided for outpatients as it is the desire of the authorities to encourage this preventive feature of the work as much as possible.

The building has been designed with the corridor on each of the lower floors in the rear and against the embankment permitting all the wards to face west, giving a view of the Hudson and abundant light and air. Above the Broadway level this arrangement is abandoned, the tower rooms receiving light from all sides.

Beds will be provided for 210 patients of both sexes, including children, grouped in small ward units so that the different types of cases can be separated for study and treatment according to their individual needs. Provision has been made for all the approved and modern diagnostic and treatment facilities which will make possible the use of hydrotherapy, electrotherapy, occupation therapy, light therapy, physiotherapy, gymnastics, psychotherapy, and special medical and surgical procedures. A well equipped dental department will be included.

All varieties of mental diseases will be studied. Admissions will be so controlled that special groups of patients, or special types of disease, will receive preference according to the special researches under way at any given time.

The children's department will constitute an important phase of the clinical work. To it will be devoted an entire floor of the hospital building. The children's wards will be provided with school rooms, work shops, and play rooms. Not only children suffering from definite mental disturbances will receive attention, but also children showing signs of nervousness, emotional instability, backwardness or mental deficiency. Special facilities will be provided for studying children who offer problems in the school and preschool ages. If necessary, such children will be admitted for observation and determination of the plan of treatment. It is generally recognized that there is a great need for intensive study of the instinctive and emotional life of maladjusted children, as these apparently play an important rôle in producing behavior disorders, delinquencies and psychopathic tendencies in children, as well as forming the foundation for many mental disorders which develop in later life. In connection with the outpatient department, a special habit training clinic for children and parents will be provided.

The outpatient department of the hospital will occupy a large part of two floors. Many mild and borderline types of mental disorder can be more satisfactorily handled in an outpatient clinic than in a hospital. Other patients after a relatively short time in the hospital, will be able to return home under the supervision of social service workers and continue their treatment by visits to the outpatient clinic.

It is thought that many persons in the early or incipient stages of mental disease will come voluntarily for treatment and admission to the hospital. In this way a large group of patients will be reached months or even years earlier than under the present unfortunate tendency to avoid a state hospital as long as possible or to use it only as a last resort, usually only after the mental disorder is well advanced. Early treatment will undoubtedly afford relief to many patients and obviate the necessity of commitment to a state hospital. There is little doubt but that the outpatient department will permit many patients to be carried along to improvement or recovery.

The treatment and diagnostic facilities of the institution are so located that they will be readily accessible for the outpatients as well as for the patients admitted to the hospital.

The diagnostic clinic which occupies a large sec-

tion of an entire floor will afford all the necessary facilities for the intensive physical and psychological study of the individual case—outpatients as well as those admitted to the hospital. Specialists in various branches of medicine and surgery, assisted by the resident staff, will conduct the examinations and outline a plan of treatment for each patient.

In the tower will be housed the library and museum, record room, director's office, staff conference room, class rooms, and the various research laboratories. The laboratories will be equipped for making special studies and investigations in the fields of neuroanatomy, neurophysiology, neuropathology, clinical pathology, chemistry, bacteriology, serology, endocrinology, and experimental psychology. The top laboratory floor will be devoted to quarters for animals, with laboratories for experimental work.

The teaching activities of the institution will be carried on in practically all of its departments. Psychiatry has been generally neglected in medical education. Physicians leaving most of the medical colleges of the country today are little better prepared to recognize and deal with the most common forms of mental disease than were their predecessors twenty years ago. Because of having their attention directed to social consequences of mental disease, many groups of laymen are at present better informed than physicians regarding the main facts of mental medicine. Through a close working connection with the College of Physicians and Surgeons, the new institution will provide the first adequate facilities in the State of New York for the instruction of students and physicians in the principles of psychiatry.

A large lecture hall and smaller class rooms and teaching laboratories will afford ample opportunity for these educational activities. Teachers of psychiatry will be enabled to hold clinics and demonstrations and give instruction at the bedside on the wards.

In conjunction with the medical schools of the city postgraduate courses of instruction in psychiatry will be given for practising physicians. Also special courses of instruction will be given for physicians in the state hospital service. Quarters will be provided for state hospital physicians who will come to work for two or three months at a time on the wards or in the laboratories of the institution. It is the purpose to add to the equipment of physicians entering the state service by giving them some preliminary training and instruction before they join the various hospital staffs.

Lecture courses will be arranged for school teachers, social workers, welfare officers and others whose work brings them in almost daily contract with various psychiatric problems.

The sphere of influence of the Psychiatric Institute will be more than local. Situated in New York city, it will have direct contact with a community that furnishes more than half of all the cases committed annually to the state hospitals. Through its teaching and its connection with the Medical Centre it will influence the whole medical world. It will also work in cooperation with various other state departments, with the prisons, reformatories, courts and schools. Furthermore, the institution will be utilized by the State Hospital Commission as a central agency to carry on a systemic statewide educational and mental hygiene program, including exhibits, lectures, local surveys and studies conducted in conjunction with the other state agencies which have psychiatric problems.

It is expected, then, that the new institute and hospital will be an important educational centre as well as a research and treatment centre—a place where information and expert advice may be obtained on all matters relating to mental health. It is believed that the new institution will become one of the most active mental hygiene centres in the country.

News Items.

Summer Courses in Mental Hygiene.—Summer courses in mental hygiene and in special education of the mentally handicapped are being conducted at the Syracuse State School for Mental Defectives in connection with the summer school at Syracuse University. Information may be obtained from Dr. O. H. Cobb, Superintendent, Syracuse State School, Syracuse, N. Y.

Travel Study Club Tour Inaugurated.—Members of the physicians' Travel Study Club of America sailed from New York recently on the Norwegian American liner, *Stavangerfjord,* for a six weeks' tour of Europe. Dr. Louis Livingston Seaman, president of the club, heads the tour. The itinerary will include practically all the larger cities of Scandinavia, Germany, France and England. The tours will take place annually.

Salzschlirf a Health Resort.—The German health and pleasure resort of Salzschlirf is offering room, board and four medicinal baths a week for a period of three weeks at a cost of about $3 a day. Salzschlirf has been especially fitted to receive American patrons and patients by including on its staff a number of English speaking physicians. Sufferers from gout, rheumatism and arteriosclerosis have found this resort of special benefit.

Dr. Roux Retires.—Dr. César Roux, of Lausanne, widely renowned Swiss surgeon, recently resigned as director of the Cantonal Hospital and at the same time announced his intention of giving up also his private practice. Although Dr. Roux has performed many operations for many different kinds of ailments, the name of "king of appendicitis" has clung to him for many years, and patients from all parts of the world came to him for operations in this specialty.

High School Medical Society.—A medical society composed of fourth term boys who intend to become physicians was organized recently at the Thomas Jefferson High School, New York. A condition of membership is a grade of not less than eighty per cent. in first year biology. The boys have received special instruction in hygiene and first aid, and will be taught to assist the medical office of the school in first aid cases. The club has assumed responsibility for first aid at athletic meets.

Civil Service Examination.—The U. S. Civil Service Commission has announced that applications for senior medical technician (pathology) must be on file at Washington, D. C., not later than July 13th. The examination is to fill a vacancy in the Surgeon General's Office, War Department, and vacancies occurring in positions requiring similiar qualifications. Full information and application blanks may be obtained from the U. S. Civil Service Commission, Washington, D. C., or from the secretary of the board of the U. S. civil service examiners at the post office or custom house in any city.

Specialist in Tuberculosis Wanted for India.—A graduate physician who has made a specialty of tuberculosis and who is in sympathy with missionary service ideals, is being sought by the personnel department of the Board of Foreign Missions of the Methodist Episcopal Church for services in India. He would have a hospital of thirty beds, with an opportunity to develop a public health service, and specialization in tuberculosis and hookworm in cooperation with other agencies in the field. The position is open to a graduate physician forty years of age or under, and having a family of not more than two children. The applicant should be a member of an evangelical church. Application and inquiries may be addressed to T. A. Hildreth, Board of Foreign Missions, 150 Fifth avenue, New York.

Psychoanalytical Society Changes Name.—At the May meeting of the Washington Psychoanalytic Society the name of the organization was changed to The Washington Psychopathological Society by a two thirds majority. The last meeting before the summer recess was held on Monday, June 28th. Dr. John H. Cassity read a paper on Psychological Considerations of Pedophilia.

World Conference on Narcotic Education.—The first world conference on education in narcotics is being held in Philadelphia, July 5th-10th. Among members of the conference committee are Robert Lansing, Senator Royal S. Copeland, Speaker Nicholas Longworth, Governor Gifford Pinchot, General John J. Pershing, and Mabel Boardman of the American Red Cross. The conference was called under the auspices of the International Narcotic Education Association, whose founder and president is Richard Pearson Hobson.

New Haven to Fight Tuberculosis.—The city of New Haven has appointed a Muncipal Director of Tuberculosis, Dr. Willard B. Slooper. The appointment was made by the Board of Health acting in cooperation with the National Tuberculosis Association, the Rockefeller Foundation, and the Trudeau Laboratories at Lake Saranac, with which Dr. Slooper was formerly connected. He had charge during the World War of the general hospital at Etretat, France, and has also done work for the Rockefeller Foundation. He has degrees from Yale, Columbia, and Freiberg Universities, and has served in the Presbyterian Hospital, New York City.

Congress of Connecticut Medical Society.—The second clinical congress of the Connecticut State Medical Society will be held in New Haven, September 21st-23rd. All sessions will meet in Sprague Memorial Hall in College Street, corner of Wall. Yale University has assigned one of its dormitories for the use of those attending the congress. Hotel rooms may also be had at the usual rates. The University Dining Hall will be open during the congress. Among speakers will be Dr. Henry Christian, of Boston; Dr. R. G. Hoskins, of Columbus, Ohio; Dr. C. F. Painter, of Boston; Dr. Robert B. Osgood, of Boston; Dr. Edward Livingston Hunt, of New York; Dr. J. Shelton Horsley, of Richmond, Va.; Dr. Frederic J. Cotton, of Boston; Dr. A. C. Christie, of Washington, D. C.; Dr. R. G. Dennett, of New York; Dr. Hugh Cabot, of Ann Arbor, Michigan; and Dr. John Osborn Polak, of Brooklyn, N. Y.

Personal.—Dr. Adolph Rostenburg has been appointed to the position of attending dermatologist at the New Sydenham Hospital, New York City.

Dr. Justin Herold, of 17 East Thirty-eight Street, New York City, left on June 12th on the French liner, Paris, for a visit to France and Germany. Dr. Herold has practised medicine in New York City for nearly fifty years.

Dr. Smith Ely Jelliffe of New York City has been made a corresponding member of the Vienna Society of Neurology and Psychiatry.

Dr. William C. Menninger, hitherto of New York City, has joined the staffs of the Menninger Neuropsychiatric Clinic and the Menninger Psychiatric Hospital in Topeka, Kansas. Dr. Menninger will limit his practice to the interrelations of internal medicine and neuropsychiatry.

Dr. Nathan E. Broder has been appointed associate obstetrician to the People's Hospital, New York City.

Dr. William H. Godsick and Dr. Irving Smiley have been appointed assistant attending gynecologists and obstetricians at Lincoln Hospital, New York City.

Dr. William Seaman Bainbridge read a paper on Cancer Today before the American Therapeutic Society, at its annual meeting in Philadelphia. He also read a paper on the Present Status of the Cancer Problem: A Résumé before the Middlesex County Medical Society of New Jersey, at its quarterly meeting.

Dr. Joseph P. Eidson has been appointed chief of the psychiatric clinic of the Cornell Clinic in New York City.

Dr. Philip J. Trentzsch has been appointed psychiatrist to the Culver Military Academy at Culver, Indiana. The Culver Academy is the first secondary school in the United States to number among its staff members a full time psychiatrist.

State Senator of New York, William Lathrop Love, a physician, and Alexander Marky, formerly a magazine editor, debated recently in New York City the question of Vaccination and Antitoxin.

Journées Médicales in Paris.—The French Republic has organized for the benefit and entertainment of French and foreign medical men visiting Paris during the summer a series of *journées médicales*, extending from July 15th-20th. Features of the occasion will be the opening on the 15th of the Medical Exposition at the Grand Palais, a visit to the Pasteur Institute on the 17th, and a visit to historic Rheims on the 19th. In addition, there will be numerous visits to clinics and institutions of interest, lectures, concerts, moving picture demonstrations, receptions, etc. During the course of the *journées*, it is hoped that an international union of practising physicians will be organized under the auspices of the Union of Medical Syndicates of France. Dr. Dujarric de la Rivière, 18 rue de Verneuil, Paris, 7e, is in charge of arrangements for participating in the *journées*.

Conventions at the Sesquicentennial.—Among meetings to be held at the Philadelphia Exposition are the American Pharmaceutical Association, August 15th-21st; Pennsylvania State Dental Society, August 23d-28th; International Dental Congress, August 23d-28th; National Medical Association, (Colored), August 24th-27th; American Chemical Society, September 6th-11th; National Association of Retail Druggists, September 20th-24th; American Library Association, October 4th-9th; and the Special Libraries Association, October 18th-22d.

Appropriation for Community Mental Hygiene.—The Commonwealth Fund of New York, founded by Edward S. Harkness, has appropriated nearly $400,000 for one year's work in a comprehensive program for community mental hygiene. That is said to be the largest sum ever set aside for work in mental hygiene during a year. The organizations participating are the National Committee for Mental Hygiene, the Bureau of Child Guidance of the New York School of Social Work, the National Committee on Visiting Teachers, the Smith College School for Social Work, and the Joint Committee on Methods of Preventing Delinquency. The new program provides for the establishment of an Institute for Child Guidance, which will supersede the present Bureau of Child Guidance of New York City and will absorb $170,000 of the total appropriation.

Gifts and Bequests.—A fund of $300,000 to found the John E. Borne Chair of Medical and Surgical Research in the College of Physicians and Surgeons of Columbia University, is provided for in the will of Mrs. Ellen Mills Borne, widow of John E. Borne, who died in 1910. Among additional bequests are $15,000 to the Long Island College Hospital, and $3,000 each to the American Society for the Prevention of Cruelty to Animals and to the Playground and Recreation Association of America.

The will of the late Ella A. Rogers contained among other public benefactions bequests of $50,000 to New York Hospital, $25,000 to Lincoln Hospital, $25,000 to the Servants of Relief for Incurable Cancer, $20,000 to St. Mark's Hospital, and $10,000 to the Home for Incurables.

Mrs. Stephen V. Harkness has given $100,000 to New York Homeopathic Medical College and Flower Hospital to endow a department of physiology, thus raising the endowment fund to $500,000. The gift is a memorial to the late Dr. E. Guernsey Rankin, after whom the new department will be called.

At the luncheon of June 19th of the Bankers' Club, with Thomas W. Lamont and J. P. Morgan presiding, announcement was made of gifts of $199,500 toward the million dollar endowment fund for the American Society for the Control of Cancer. This brings the total to $338,515.

By the will of the late Louis Sherry, the endowment for the J. Bentley Squier Urological Clinic at the new Columbia-Presbyterian Hospital Medical Center will be increased by approximately $700,000. This will bring the sum available for the clinic to about $1,300,000. Mr. Sherry also provided that any income above that necessary to provide for his wife shall go to the clinic, thus establishing a fund to be known as the Bertha Sherry Memorial Fund. An anonymous gift was recently made to the Bentley Squier Urological Clinic amounting to approximately $200,000. This took the form of a pledge to pay $1,000 a month, in perpetuity toward a fund for maintaining ward patients in the clinic.

The will of the late Dr. Julius Rudisch provides, in a contingent bequest, that his estate of "more than $50,000" shall ultimately be divided between the New York physicians Mutual Aid Association and Mount Sinai Hospital, of New York.

Book Reviews

GYNECOLOGY

Gynecology for Nurses. By M. J. Seifert, A.B., M.D., F.A.C.S., Attending Surgeon and Gynecologist, Columbus Hospital, Chicago. New York and London: D. Appleton & Company, 1925.

An excellent work, evidently the result of an extensive practical experience on the part of the author. The reader gradually passes from the basic subjects of the anatomy, physiology and pathology of the female generative organs to a consideration of special conditions which constitute the major conditions with which gynecology deals. The text is written in a clear and concise manner, illustrations are standard in character but well drawn, and the printing is excellent. Special chapters written by special contributors include a section on gynecological urology, one on radiotherapy and another on endocrinology. Twenty pages are devoted to the subject of diet in gynecology, and it is to be hoped that the appetizing menus here recorded will not have been written in vain, but will find a place in the actual dietary of gynecological hospital wards. The volume concludes with a useful chapter on medical terminology, including a copious list of prefixes, suffixes and roots of the most commonly used medical terms. On the whole, the book is excellent and ought to be exceedingly useful to the student or graduate nurse.

MATERIA MEDICA AND THERAPEUTICS

Materia Medica and Therapeutics. Including Pharmacy and Pharmacology. By Reynold Webb Wilcox, M.D. Philadelphia: P. Blakiston's Son & Company, 1926.

This excellent book has reached its eleventh edition. The author states in his preface that this new edition was made necessary by the appearance of the Tenth Revision of the United States Pharmacopeia. He describes a number of drugs and preparations that might as well be deleted, and especially should such substances as orange, lemon, honey, wax, suet, etc., be omitted from a medical book. The author has not seen fit to change the doses of liquid preparations from "mils" back to "cubic centimetres" to conform to the last edition of the Pharmacopeia. It will be remembered that the only edition of the Pharmacopeia that ever adopted a dosage of mils was the ninth edition.

It is too bad, on page 26, to perpetuate the absurd prescription there outlined, namely, tincture of the chloride of iron 12 mils, quinine hydrochloride 2 grams, magnesium sulphate 60 grams, glycerin 60 mils, and water, ad 240 mils, in which the directions are to take a "teaspoonful three times daily, two hours after meals." It would be impossible to have any patient, at the present day, take such a nauseating dose as above directed. In modern medical times such a prescription is inexcusable.

There is too much favorable comment concerning the use of iodoform; it certainly should not be used freely for dressings, as there is danger of absorption and poisoning. Boric acid should never be used internally; the author is a little too generous at times in stating old uses of drugs. Also there is no use for potassium permanganate internally, except as an antidote, in the stomach, to morphine poisoning.

With these few mild criticisms the reviewer highly commends the book for the use both of students and practitioners. The pharmacology is brief and up to date, and the therapeutic advice is good.

SURGICAL CLINICS

The Surgical Clinics of North America. San Francisco Number. Volume 6, Number 2. Philadelphia and London: W. B. Saunders Company, 1926.

Twenty clinics are presented in this number of the well known *Surgical Clinics,* representing various San Francisco hospitals. The subjects of these clinics vary considerably, as is generally the case, ranging from hammer toe to cerebral anemia. L. A. Emge offers an unusually interesting clinic on Varicose Veins of the Female Pelvis; E. I. Bartlett and C. L. Callander discuss the subject of Neck Dissections, while Frank Hinman presents an interesting contribution on the Experimental Study of the Pathogenesis of Hydronephrosis. Seventy-three excellent illustrations contribute to the value of this volume. It may be said that the general high standard of previous issues has been fully maintained in the volume under review.

WASSERMANN REACTION

The Clinical Interpretation of the Wassermann Reaction. By Robert A. Kilduffe, A.B., A.M., M.D., Director, Laboratories, Atlantic City Hospital, etc. Illustrated. Philadelphia and New York: Lea and Febiger, 1926.

The author has presented the case of the Wassermann reaction concisely and clearly. With some of his views, many will differ; with most, all will agree. Much attention is given to the matter of misinterpretation of the test, due, unfortunately, to the fact that it is more frequently applied than wisely interpreted. The author maintains that much of the misinterpretation of the test is due to the influence of conceptions coincident with its discovery and early application, such as the erroneous idea of a true biological specificity, the fear of widespread false positive reactions in a host of varied diseases, or the unwarranted clinical significance attached to a negative reaction and so on; conceptions which the prolonged and extensive studies conducted in more recent times have shown to be fallacious.

Unfortunately, the clinician still is faced by the difficult problem of reconciling contradictory results in identical serum obtained simultaneously by different serologists, as emphasized by Wolbarst and other clinicians. A careful search through this volume does not reveal any mention of these contradictions. True, they cannot be explained, inasmuch as they have been found to occur in the work of serologists whose reliability and technical integrity are beyond question. The conscientious clinician therefore may be pardoned for expressing a somewhat lessened enthusiasm in the universal efficacy of this most valuable test.

Regarding the value of the reaction in primary syphilis, the author rightly says that the earlier the lesion, the more valuable the dark field examination; the older the lesion, the more valuable the complement fixation test. In this teaching lies much wisdom, which it would be well for the general practitioner to learn. The same may be said of the au-

thor's statement regarding the test in untreated secondary syphilis, to the effect that a positive reaction does not necessarily indicate the syphilitic nature of the immediate or presenting symptoms. This presupposes a knowledge of clinical syphilis, a subject which the laboratory diagnosis is converting into one of the lost medical arts. The author quotes, in evident agreement: "A product of our modern methods of diagnosis and treatment is the pseudosyphilographer. For him the clinical study of syphilis is unnecessary. The public Wassermann laboratory makes the diagnosis without charge and a few injections of arsphenamine clear up the lesions." It is unfortunate, but true, that the laboratory diagnosis has done much mischief, not only by stamping a wrong diagnosis upon the hapless victim, but by robbing the practitioner of the ability and the courage to make a clinical diagnosis when that is possible. It were well if the practitioner could accustom himself to the thought that a positive seroreaction is one of the symptoms suggestive of the presence of syphilis—not the complete diagnosis.

The work under review is one which every practitioner of medicine can read and study with profit. The complement fixation test has reached the stage in medical practice in which it must be accepted as a most important diagnostic aid, but it is of the utmost importance that the practitioner should clearly understand not only its transcendent value, but also its limitations and the pitfalls which await him who misinterprets its findings. A careful study of this little volume will reveal these pitfalls and lead to a better understanding and greater appreciation of the test and its utility in syphilis.

PHARMACEUTICAL CHEMISTRY

A Text Book of Pharmaceutical Chemistry. By Arthur Owen Bentley, Ph.C. Director of the Department of Pharmacy, University College, Nottingham, and John Edmund Driver, M. Sc. (Lond.), A. I. C., Lecturer in Chemistry, University College, Nottingham. Oxford University Press. London: Humphrey Milford, 1925. Pp. 456.

With the raising of the standard of the education of the pharmacist comes a corresponding improvement in the textbooks which he must use. This volume of pharmaceutical chemistry, while it is based particularly on the British Pharmacopeia, will certainly prove a useful text for American students. There is included a considerable amount of qualitative and quantitative technic in addition to the purely descriptive chemical material. The whole subject of pharmaceutical chemistry is admirably treated.

QUALITATIVE ANALYSIS

A Systematic Course of Qualitative Chemical Analysis of Inorganic and Organic Substances, with Explanatory Notes. By Henry W. Schimpf, Ph.G., M.D., Professor of Analytical Chemistry in the Brooklyn College of Pharmacy. Fourth Edition. Revised by Alfred I. Cone, Phar.D., Ph.G. New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Limited, 1924. Pp. 201.

The fourth edition of this standard guide for qualitative analysis has been considerably improved in the part devoted to the determination of the various synthetic drugs, and brought up to date in the portion devoted to inorganic substances. It remains one of the best of the smaller texts of qualitative analysis for pharmacy students.

BLOOD CHEMISTRY

Blood Chemistry. Colorimetric Methods for the General Practitioner With Clinical Comments and Dietary Suggestions. By Willard J. Stone, B. Sc., M.D. Second Edition, Revised. Introduction by George Dock, M.D. New York: Paul Hoeber, Inc., 1926. Pp. 129.

This laboratory manual of blood chemical work follows the traditions laid down for such texts. Each method has the logical arrangement into, 1, solutions used; 2, preparation of solutions; 3, final step, and 4, calculation. The procedures are all very clearly explained. The book differs from most laboratory guides of similar nature in having at the end of each determination a page or so of clinical comments, and the two final chapters are devoted to the dietary control of disturbances of metabolism, and brief comments on the diet in diabetes mellitus. In those communities where the knowledge of the interpretation of blood chemistry determinations is not so diffused as it is in the larger hospital centres, the inclusion of the clinical comments will be a particularly useful feature.

MONTEFIORE HOSPITAL ACTIVITIES

Collected Reprints. Montefiore Hospital for Chronic Diseases. New York. Volume IV, 1925.

The material seen at the Montefiore Hospital is varied, and offers an opportunity for the study of chronic diseases that the wards of other hospitals, generally more devoted to the rapid turnover of acute surgical cases, or to medical cases which come and go, do not have. The reprints in this volume reflect also the varied activities of the Montefiore Hospital, from studies on crown gall disease, to those on some phasic and permanent mutations in certain encephalitic syndromes. The volume is divided into the following sections: cardiovascular system; metabolism and internal secretions; nervous system; gastrointestinal system; tumors and tumor therapy, and a general section, dealing mainly with the care of the sick poor. This is an interesting collection of reprints.

ROCKEFELLER INSTITUTE STUDIES

Studies from the Rockefeller Institute. Volumes LIV and LV. New York: The Rockefeller Institute for Medical Research, 1925 and 1926.

These two volumes containing collected reprints, each totalling some six hundred pages, are an effective tribute to the industry of one research institution in America: The Rockefeller Institute. The collected papers cover studies in pathology and bacteriology, biophysics, chemistry, experimental surgery, general physiology, animal pathology, and studies from the Hospital of the Institute. Many of the articles have already been abstracted in these pages.

MEDICAL RESEARCH IN AUSTRALIA

The Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne: Collected Papers. Volume II, 1923-1925.

This is an interesting collection of reprints of twenty-two papers which have appeared in various Australian medical journals within the past two years. Of these, seven deal with the study of hydatid disease of the liver, the use of Casoni's reaction in its diagnosis, etc., and several others with the complement fixation test in tuberculosis.

Medicoliterary Notes.

The Annual Report for 1925 of the Health Organization of the League of Nations has recently been issued.

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Birkbeck College of the University of London has organized among its students a movement for reducing the suffering caused by cruelty to animals throughout the world.

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Endemic Goitre and Intelligence is the title of a study published in *Public Health Reports* for May 21st. By Robert Oleson, Surgeon, U. S. Public Health Service, and Mabel R. Fernald, Ph.D., Director of the Psychological Laboratory of the Vocation Bureau of the Cincinnati public schools.

* * *

Dr. Bailey Willis, professor emeritus of geology at Leland Stanford University, has recently announced through the press that local business interests near San Francisco are introducing a program, inaugurated by the Carnegia Institution of Washington, for the "microscopic" study of earthquakes with a view to preventing such damage as that suffered by San Francisco in 1906 and by Santa Barbara in 1925.

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The Harmon Foundation, through the Survey Associates, has offered three prizes of $250, $100 and $50, respectively, to be awarded for the best unpublished manuscripts dealing with some experiment, invention or achievement in the field of public health. The winning papers will be published in the *Survey* and collaborating periodicals.

* * *

An interesting and instructive document recently published by the State Department of Health of Illinois makes up the issue of its *Health News* for May-June. This is the Report on an Appraisal of Health Service for the Year 1925 in Fifteen Illinois Cities, which has recently been conducted by the Illinois Department of Health.

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Oregon dealers in eggs are rapidly abandoning the old American tradition of selling eggs by the dozen and are selling them by the pound. This means that Oregon hens are expected, not only to produce their quota for the year, but also to lay eggs weighing not less than one and five sixths ounces, if they want to meet the standards set in a recent State egg law.

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The Influence of Employment Upon the Fertility of Women is the title of an interesting article in the *Statistical Bulletin* of the Metropolitan Company for May.

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During the two months which have elapsed since the passage of a law in Germany greatly increasing the charge for dog licenses, more than six thousand pet dogs in Berlin alone have had to be destroyed, according to *L'ami des ammaux,* because their owners could not afford to pay their license fees.

* * *

Dr. C. A. Magoon, of the Bureau of Plant Industry of the U. S. Department of Agriculture, has recently announced through an article in the *Journal of Infectious Diseases,* that he has been able, by a process of selection, to produce a strain of bacterial spores twenty-five times as resistant to heat as the original spores with which he started his experiments. Dr. Magoon concludes his article by saying: "More information upon this important subject is greatly needed, for, until more is known of the reasons for these differences, satisfactory and reliable methods of spore destruction cannot be developed, and the technology of food preservation will continue to be subject to the laws of chance."

* * *

Modern Sunlight is the title of a new British journal which recently began publication in London in the interests of actinotherapy. The medical section of the journal is edited by Dr. Percy Hall, M.R.C.S., L.R.C.P., honorary actinotherapist to Mount Vernon Hospital, London.

* * *

The June number of the *Welfare Magazine,* issued by the Illinois Department of Jublic Welfare of the State of Illinois, is devoted to the problem of the unmarried mother and her child. The contents include a Suggested Approach to the Study of the Boy, by Maurice H. Krout; The Relation of Psychology to Psychiatry, by Dr. G. W. Morrow; Fifty Years Ago, by C. A. Purdunn; The Cradle or the Grave, by Roy James Battis; Race Betterment Problems with Special Reference to Heredity, by Dr. P. S. Waters, and Limitations of an Institution for the Feebleminded, by Anna Polkowski.

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The Henry Street Settlement has recently issued a report of its various activities, including the visiting nurse service. The pamphlet is very attractively illustrated.

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The Italian Facisti have inaugurated a campaign against birth control knowledge, which, they assert, is the cause of the decreasing birth rate in some of the Italian provinces.

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Dr. Leslie R. Marston of the Iowa Child Welfare Research Station at the University of Iowa has been making a study of the personalities and temperaments of one hundred children between the ages of two and six on the basis of introversion and extroversion. A report of this study has recently been published.

* * *

The statement has been accredited to Prof. Walter L. Whittlesey, of the Political Department of Princeton University, that American independence was not born on the Fourth of July, nor was the Declaration of Independence signed on that date. "What was done on our first Fourth," said Professor Whittlesey, "was only to agree to the final draft of the poster which John Dunlap printed on the night of July 4, 1776, for public distribution. By that date our thirteen original States had been solemnly and officially independent for two days. The tie with Great Britain was cut by resolution of Congress on July 2d.

* * *

A new agricultural poison, calcium cyanide, is being found most effective in ridding trees and plants in southern California of insect pests. Calcium cyanide, while theoretically appearing to be a simple preparation to the ordinary chemist, is impossible to make in any ordinary way. By combining calcium carbide with hydrocyanic acid, however, a light brown powder is secured and this substance has the power of pouring a veritable wave of poison gas when it is merely exposed to common air. Fumigators simply blow the poison in a dust cloud under the regular orchard tent, with death dealing results to any living creature that may be beneath it.

* * *

A public health library which gives services other than the ordinary ones is that maintained by the Health Education Department of the Public Health Centre of Alameda County, California. Films and slides, five hundred health posters, free pamphlets, and food and anatomical models can be found there.

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Plant life cannot exist more than six hundred feet below the sea, but animal life has been found at a depth of four miles.

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According to the recently published report of the National Bureau of Casualty and Surety Underwriters, automobile fatalities in the United States in 1925 increased approximately 2,200 over those in 1924. In 1925 the total number was 22,500; excluding collisions with street cars and railway trains, they increased from 17,600 in 1924 to 19,800 in 1925; fatal automobile grade crossing accidents rose from 1,688 in 1924 to 1,784 in 1925. The automobile death rate per 100,000 increased from 14.9 in 1923 to 15.7 in 1924, and to 17.2 in 1925. This means that the increase in 1924 was five per cent.; in 1925 it was nearly ten per cent. In 1925 approximately 6,300 children under fifteen years of age were killed by automobiles, as compared with 6,090 in 1924.

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One of the recent publications of Harcourt, Brace & Company is the *Book of Marriage,* edited by Count Hermann Keyserling, and containing articles by Jung, Havelock Ellis, Adler, Richard Huch, Beatrice Hinkle and others, discussing all the aspects of the marriage problem, particultrly the modern one.

* * *

China has more than two hundred distinct currencies in use, some of which are good throughout the country, some in only a few of the provinces, and some only in the section where they originated.

Abstracts from Current Literature

GYNECOLOGY AND OBSTETRICS

Interagglutination of Maternal and Fetal Blood in the Late Toxemias of Pregnancy.—Wilmar M. Allen (*Bulletin of the Johns Hopkins Hospital,* March, 1926) studied the isoagglutination relationship in 479 mothers and their newly born infants. Of these 375 were normal and 104 toxemic women. The tests showed no evidence that incompatibility was more frequent in toxemic than in normal gestation. Incompatibility between the bloods of mother and infant was present in 20.8 per cent. of the normal and 21.1 per cent. of the toxemic pregnancies. There is no evidence of an increased agglutinin titer in the maternal serum of toxemic women, nor of specific immunization of the mother against fetal corpuscles. The discrepancy between this and previous work is probably accounted for by the size of the series studied. With a small number of cases the percentage of error and likelihood of coincidence are very great. The study of this series of cases, by the methods used, give no evidence that the late toxemias of pregnancy have their origin in isoagglutination phenomena.

Basal Metabolism in the Toxemias of Pregnancy.—H. J. Stander and C. H. Peckham (*Bulletin of the Johns Hopkins Hospital,* March, 1926) studied the basal metabolic rate of women during pregnancy, which showed the same gradual increase during the latter half as already reported by other authors. The return to normal occurred at about the tenth day of the puerperium, and was gradual and steady. In preeclamptic toxemia the basal metabolic rate is slightly higher than in normal pregnancy. It returns to a normal level about the fifteenth day of the puerperium. Nephritic toxemia is associated with a basal metabolic rate of about +33 before delivery. This figure is slightly higher than that for the preeclamptic group. The tendency for the basal rate in nephritic toxemia is to stay high for a longer time during the puerperium than it does in preeclampsia. The basal metabolic curve for the eclamptic group is almost identical with the nephritis curve. Basal metabolism determinations do not prove of any real help in differentiating between the various types of toxemias in late pregnancy. In normal pregnancy, as well as in the different toxemias of pregnancy, there is some factor or factors which result in an elevated basal metabolic rate as term is approached, a gradual return to normal ensuing during the puerperium. It is probable that such factor, or factors, may have to do with the growing product of conception, as well as a slight increased activity of the thyroid gland.

Latent Syphilis and Pregnancy.—E. Bertin (*Presse Médicale,* March 3, 1926) states that for several years the frequency of overlooked syphilis in women has been attracting attention. It is a striking fact that in many women syphilis may remain latent for many years and be suddenly revealed by an abortion, a premature delivery with death of the fetus, or the birth of a child with unmistakably syphilitic lesions. Not rarely apparently healthy women are delivered of a fetus or child whose syphilis contrasts in its virulence with the mother's health; such women, indeed, remain well for many years or even throughout life. In some, the serum reactions, after having shown an active syphilis, become completely negative. This type of maternal syphilis is very mild, in fact quite extraordinarily mild, at its onset. The same has been true, in the author's experience, of the source of infection. Although syphilis is usually transmitted by an early, active lesion, he has seen it transmitted six, seven or ten years after the chancre by well informed, cautions men (physicians) thoroughly aware of the danger from the least genital erosion. Most of these infections of women which are unusual in their mildness of outset have been transmitted by husbands who have been under treatment for a very long time. It appears that these latent cases of syphilis in women may under certain physiological or pathological conditions be whipped up to become suddenly virulent. Pregnancy is one of the commonest and most potent of these factors. In general, the latent spyhilis is grave more particularly to the fetus; in the mother, indeed, a succession of miscarriages seems to attenuate her own infection. The relative mildness of the infection in spite of an impressive series of miscarriages which would seem to indicate that it is severe may be compared to the observations of cases of syphilis which have particularly intense lesions of the skin and mucous membranes at the start, but which, as shown by experience, are ultimately the mildest, even when they have recurrences. In such cases the infection seldom localizes later in the major viscera or nervous system. Intense localization of the infection in certain structures in all likelihood confer a certain degree of general immunity which protects the individual from other manifestations of the disease. At all events, the apparent mildness of the occult forms of syphilis is not to be relied on. It is therefore important that such cases shall be detected and treated, not only in the interest of the patient, but in that of society. These conceptional forms of syphilis seem commoner nowadays, partly or wholly because syphilis, treated vigorously in the dispensaries and in private practice, has lost some of its virulence without, unfortunately, being extinguished altogether. Obviously there is need of increasing prophylactic endeavors, in particular in the field of prenatal care.

Lipiodol in the Diagnosis of Pregnancy.—Carlos Heuser (*Lancet,* November 28, 1925) states that when a period or two is missed by a woman one can never be quite sure of a pregnancy, for the uterus might be small or it might be anteflexed or retroflexed. In such cases a precise diagnosis is only possible by the use of x rays to show whether the uterine cavity is occupied or not. The injection of lipiodol into the uterine cavity, in the author's experience, never produced abortion and the roentgenograph enabled him to make a positive diagnosis.

The following fixed rules are laid down: When a woman after conception, and after one or more missed periods, wants to know if she is pregnant, and the clinical examination is indecisive, lipiodol may be injected into the uterus. A roentgenograph should then be taken in order to give absolute certainty.

If the injection has been successfully made the roentgenograph of the uterine cavity filled up with lipiodol shows:

1. That the cavity is not well filled if the fetus is more or less developed, the lipiodol penetrating around the fetus, and showing that the cavity is occupied.

2. The round shape of the stain with the roentgenograph of a tube together with the clinical symptoms indicating pregnancy.

3. When the fetus is larger, the liquid penetrates very little, in a line more or less curved, and the form of the roentgenograph of the uterus indicates the pregnancy.

4. If the period is missed once or twice and the patient thinks herself pregnant, the injection of lipiodol into the uterine cavity may show in triangular shape, and at the same time one or both tubes may fill up with the liquid. In such a case the roentgenograph shows that the uterine cavity is unoccupied and there is no pregnancy.

5. Every roentgenograph of the uterine cavity must be complete in order to show the neck and cavity for a satisfactory diagnosis to be made from it, together with the clinical symptoms.

6. The roentgenograph may thus allow us to diagnose sterility due to obstruction of the tubes; for it may be observed that they do not fill or fill up badly.

7. In cases of pyosalpingitis and old salpingitis a roentgenograph of the tubes can be obtained and the diagnosis confirmed.

This method was applied to all patients who presented themselves without any special selection and without any disturbance further than a careful disinfection of the vagina and the bladder. A mild laxative is given to clear the bowels. Four hours before twenty to thirty drops of opium are given to quiet the patient. After thorough sterilization of the vagina and cervix, one to two c.c. of lipiodol are injected, the roentgenograph is taken, and, if possible another two to five c.c. are injected and a second roentgenograph is taken. At the same time, if a better roentgenogram is wanted, forty to sixty c.c. of air may be injected into the bladder. The patient must lie on her shoulders and in the Trendelenburg position.

When there is doubt in the diagnosis between a tumor and pregnancy two to five c.c. of lipiodol is injected on the

first day, and on the following day air is injected into the tubes in order to cause a pneumoperitoneum of 150 to 200 c.c., the patient being in the Trendelenburg position. To show the uterine cavity, five to ten c.c. of lipiodol is injected carefully. When the liquid enters the tubes it produces a little colic and a characteristic pupillary reaction—first a dilatation and then a contraction of the pupils. If the woman has had salpingitis the reaction is much stronger, but there is no pain. If the tubes are obstructed, they do not fill up. It may be necessary to persist with the injection once or twice more in order to fill the tubes.

To determine the permeability of the tubes, whether for the diagnosis of sterility or of salpingitis, the technic is different. The preparatory treatment is the same as above. Then ten to twenty c.c. of the liquid are injected into the uterus with a big cannula, the cervix of the uterus being well closed in order to avoid the passing of the lipiodol into the vagina. The bladder is then filled with air. In the presence of salpingitis the tubes do not fill up with the first injection, and it is necessary to repeat the injection until a good roentgenogram is obtained. In this way the causes of sterility can be determined, whether they be obstruction of the tubes or malposition. Twisting of the tubes can be visualized. In the presence of a tumor of doubtful nature, a pneumoperitoneum is induced by way of the tubes. By this means the clear space in the pelvis due to the pneumoperitoneum reveals the tumor of the uterus and the relations of both to other organs.

Cyesedema: A Peculiar Bloating of Pregnancy.—A. A. Lendon (*British Medical Journal,* December 19, 1925) calls attention to a peculiar bloating or swelling, which is quite distinct, on the one hand, from anasarca or ordinary pitting dropsy, and, on the other hand, from the solid swellings, such as myxedema, which it certainly more nearly resembles. It was observed in six out of 363 cases.

It affects the whole body, but naturally it attracts more attention in the face, as it so greatly alters the features of a young woman as almost to make her unrecognizable towards the end of pregnancy. The author has seen it only in primiparæ; it disappears with considerable rapidity after the labor is over. It has not recurred in the author's cases in subsequent labors; though not specially associated with postmaturity according to the maternal reckoning, the babies have been large. In two cases there was some albuminuria, but no other recognized indication of the socalled toxemia of pregnancy. There are none of the signs of myxedema or renal edema. There is rather some lividity and there is no high blood pressure.

What is its nature? It is certainly not due to nephritis and hypothyroidism may be ruled out of the question. Williams suggests that it may be related to hypertrophy of the anterior lobe of the pituitary body, which, he says, has been "shown to undergo regularly great hypertrophy during pregnancy and to atrophy after the termination of the pregnancy."

Treatment of Cervical Catarrhs with Animal Charcoal.—Fr. Chr. Geller (*Zentralblatt für Gynäkologie,* January 16, 1926) asserts that specific therapy is usually directed toward the vagina in catarrhs of the uterine cervix, and this is the very reason why such treatment is often unsuccessful. The cervix itself is much too often neglected. This neglect of the cervical mucosa is based upon the fear of spreading the infection after intracervical therapy. But this danger has been too much overestimated. The menstrual hyperemia, desquamation and regeneration of the mucosa is a powerful factor in the prevention of the spread of the infection.

Urged on by the favorable results of the socalled biological therapy of leucorrhea, the author has attempted to treat this condition most conservatively by making the bacteria and their toxins innocuous and eliminating them. The intracervical methods of treatment used heretofore have the disadvantage that they injure the cervical mucosa either mechanically (curettage), thermically (cauterization) or chemically (cauterization by chemicals) and so reduce the natural powers of resistance of the tissue. The author has tried an indifferent therapy patterned after the powder insufflation of the vagina and the bolus and charcoal treatment of infectious intestinal catarrhs. The curative power of the pulverized animal charcoal is due to the marked adsorption of the bacteria and their toxins and of the wound secretions. Not only are the bacteria sucked up, but the conditions of life for bacteria are made difficult by the simultaneous drying of the tissues. There is no injury to the cells of the tissues and a hyperemic stimulus upon the tissues is exerted by the abstraction of water.

The only indication for this form of treatment is chronic cervical catarrh. The cases should be carefully selected. Positive gonorrhea is a contraindication, as is also adnexal inflammation.

For the insufflation of the powdered charcoal the author has devised a special cervix powder blower. The instrument and the charcoal must be sterilized. The technic or insufflation is the following: The patient and the physician are prepared as for a curettage. About a quarter of a teaspoonful of powdered charcoal is placed into the insufflator. The vagina and cervix are disinfected and dried as much as possible. The cervix is dilated with a Hegar dilator and the insufflator is immediately inserted into the cervix. Two or three pressures are then made on the hand bulb, after which the insufflator is withdrawn.

Certain Cardiovascular Conditions in the Pregnancy of Normal Women, Including the Response to Efficiency Tests.—Dorothy C. Hare (*British Medical Journal,* November 7, 1925) submitted pregnant women to the following tests: Pulse rate, lying, sitting and standing; also after an easy standard exercise, when the rates noted were: 1, the maximum after exercise; 2, the rate at one and a half minutes as compared with the resting rate; 3, the total number of beats during two minutes after exercise. Blood pressures, lying and sitting, were recorded.

The results showed for the most part a high degree of normality in the adjustments of circulation. One may say that the rate of the pulse, whether lying, sitting, or standing, is normal, though in the eighth month there is a slowing of the pulse rate when sitting as compared with lying, which may be associated with the position of the uterus and pressure on the diaphragm.

The exercise test was well performed throughout, but the return of the pulse to the resting state after the exercise is slower in the earlier months; this may mean that the efficiency is less, but in other tests it appears that the fourth month is a period when the heart is more easily excited to a rapid rate than later in pregnancy.

Blood pressures show no tendency to rise with the advance of pregnancy and are indeed throughout on the low side of normal.

The application of the knowledge gained by physiological tests is obviously important to the better understanding and treatment of pathological conditions.

Sound Sign in Retroflexion of the Uterus.—H. Stribrny-Silber (*Zentralblatt für Gynäkologie,* November 7, 1925), utilizes the sound sign to differentiate between a freely movable and a fixed retroflexion of the uterus. The sound is carefully introduced to elevate the uterus and the behavior of the sound is observed. A fixed retroflexion is indicated by an elastic rebound of the sound which anteflexes the uterus at the moment when the sound is released by the retaining hand (positive sign). This rebound is explained, naturally, by the traction of the adhesions drawing the uterus backward. If the sound does not rebound, but remains in the position of anteflexion imparted to it, or if it falls back slowly from its own weight, the sign is negative and the uterus is considered as movable.

With the positive sign, cases of fixed retroflexion of the uterus include, in the first place, those in which the retroflected uterus itself is adherent to the neighboring structures by adhesions, those in which inflammatory changes of the adnexæ lead to a mediate fixation of the uterus, and those in which the fixation of the uterus consists only in a limitation of its free movement as a result of impinging tumors (myomas and adnexal tumors). We must also include the cases in which the spatial limitation is produced not by the genital organs themselves, but by the bony pelvis. It has been observed that the elevation of the uterus that in itself is movable is possible only when the sound is directed laterally to the markedly prominent promontory; in these cases the sound sign is positive when the promontory is not avoided, because the uterus and the sound then are caught by it.

Movable retroflexion—the negative sound sign—occurs when the uterus is absolutely free from adhesions. If the adhesions are only few and delicate, the sound sign may be negative. In these cases, bimanual examination leads to the correct diagnosis, because the elevation of the uterus, as a result of the traction on the peritoneum, is markedly painful

because of the adhesions, and the uterus again resumes its previous position in spite of a successful elevation. These cases are the borderline cases, as the adhesions of the uterus are not sufficiently strong to exclude an elevation, and thus make the sound sign appear to be positive. This group also includes some cases in which there is a mediate fixation of the uterus from disease of the adnexæ. If the adnexal changes are marked and firm and also bilateral, the uterus is naturally fixed and the sound sign is unquestionably positive; but if they are less pronounced, they may result in movability of the not mediately fixed uterus, which may make the determination of the sign difficult.

This maneuver is contraindicated only in pregnancy and acute infectious cervical catarrh; in all other cases, especially with tense abdominal walls, a fat abdomen and in virgins, this is the best means of differentiating the movable from the immovable retroflexion of the uterus.

Diagnosis of Gonorrhea in the Female.—As a result of some clinical studies, William G. Schultz (*Zentralblatt für Gynäkologie,* November 7, 1925) comes to the following conclusions:

1. In more than ninety per cent. of all the cases of gonorrheal infection examined, the cervix uteri and urethra were involved simultaneously.
2. The process of labor has no demonstrable influence upon the localization of the gonococci in its anatomical clinical sequelæ.
3. The vaginal mucous membrane appears to be predisposed to gonorrheal infection only in juvenile, pregnant and senile women.
4. In over seventy-five per cent. of all cases of gonorrhea of the female genitals, a rectal gonorrhea was present at the same time.
5. The secretions from the urethra and cervix can be obtained in a pure state only when the smear is taken after the urethral meatus and the cervix are previously thoroughly cleansed.
6. A urethral smear should be taken only two hours after the last urination.
7. In almost ninety-nine per cent. of the cases the secretion, taken under proper conditions, was sufficient for the microscopic diagnosis.
8. A practically valuable decision as to the result of a microscopic examination of the secretions should be given in chronic gonorrhea only after at least five smears have been taken, provided gonococci have been demonstrated previously.
9. A provocative test should be made in all cases that remain suspicious after five negative smears.
10. The comparative best results are obtained with a combination of the mechanical, chemical and biological provocative tests with at least ten subsequent smears from the urethra and cervix uteri.
11. Not only extracellular and intracellular gram negative diplococci occurring in groups, but even isolated gram negative diplococci of the typical coffee bean shape are characteristic for the presence of a gonorrhea.

A Symptom Group Met With in Women During the Period of Reproductive Ability.—A. C. Guillaume (*Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris,* March 4, 1926) calls attention to a group of disturbances sometimes observed in women in the period comprised between puberty and the menopause. It is characterized by: 1, Disturbed circulation in the hands and feet; 2, sympathicotonic nervous disturbances; 3, mental upsets of the anxious type, likewise related to sympathicotonia; 4, endocrine disturbances, featured mainly by menstrual disorders, secondarily by disturbances referable to the thyroid gland. The patients complain of cold hands and feet, coupled with hypesthesia and sometimes prickling sensations. The skin may be pale, livid or purplish red. Occasionally the fingers are sausagelike, and the skin of the extremities often shows slight excoriations, and may be thickened. The veins of the distal segment are very often turgid; there may be slight edema or even an erythema induratum. During the periods of circulatory disturbance the radial and dorsalis pedis arteries are almost or quite pulseless, while the brachial and femoral pulsations are not only normal but often even accentuated. The pulse pressure is normal or even abnormally high. Capillaroscopy shows a marked reduction of the arterial blood supply at the extremities, with or without venous stasis. After exposure to hot air, the pulse and capillary circulation are found much improved and the tissues are warmer and show a change of color. The disturbance is thus due to a spasm of the arteries and arterioles, limited to the distal segments. The sympathetic disturbances comprise neuralgic pains in the chest, limbs and head, typically mobile and wandering. Precordial (anginoid) and epigastric (solar plexus) pains, on the other hand, are fixed in location. Headache of the migraine type is frequent, and there are often joint pains, especially in the menopause cases. Other symptoms are anxiety, a tight feeling in the throat, dry mouth, restlessness, slight tremor, and thoracic oppression. Mentally, irritability, anger and anxiety occur during the periods of vascular spasm. That an endocrine disturbance is associated is indicated by the fact that the symptom group appears either at puberty, the menopause, or in conjunction with dysmemorrhea. The symptoms are apt to set in or become worse in the premenstrual period and be relieved when the flow begins. Out of nineteen cases, two had evidences of hyperthyroidism and one, exophthalmos without frank Graves's disease. In six out of seven cases in which the basal metabolism was determined it was found greatly increased during the periods of activity of the symptoms. The syndrome seems related to a disturbance of ovaro-uterine function, with a cyclic character coinciding with the menstrual periods.

Spinal Anesthesia in Cæsarean Section.—A. Brindeau (*Bulletin de l'Académie de Médecine,* March 2, 1926) states that spinal anesthesia possesses certain especially valuable properties for Cæsarean section, having the effect of enhancing contraction and retraction of the uterus while paralyzing the whole of the noncontractile portion of the cervicovulvoperineal canal. In nearly all of 102 cases of Cæsarean section in which the procedure was applied, anesthesia was perfect and the operation carried out under ideal conditions. There were six cases, however, in which the lumbar puncture proved impracticable; in one case the anesthetic failed and in eight cases a little ether had to be added. Aftereffects from the anesthesia were exceptional. The method does not seem to be altogether free from danger in the pregnant woman, however, as there were two deaths in 232 anesthesias, including one in an apparently healthy woman. The preferred anesthetic technic consists of bringing into solution 0.08 to 0.1 gram of powdered procaine directly in the patient's spinal fluid. Spinal anesthesia renders Cæsarean section, especially when suprapubic, much easier. The risk of fatality should be balanced against the advantages of almost complete absence of hemorrhage, a much simpler aftermath and a low morbidity.

Prophylaxis of Thrombosis of the Femoral and Iliac Veins and of Embolism Following Labors and Gynecological Operations.—M. Walthard (*Schweizerische medizinische Wochenschrift,* September 24, 1925) asserts only the slowing of the blood stream can be therapeutically attacked as an etiological factor in thrombosis of the femoral and iliac veins, namely, by the artificial acceleration which is induced by active motion therapy.

At the University Gynecological Clinic in Zurich, the following gymnastic exercises are carried out two to three times daily, beginning from the first day postpartum and after operation in obstetrical and operative cases, respectively, as long as the patients remain in bed:

1. Extension of the arms laterally, first in the lying and then in the sitting posture; flexion and extension of the wrists; flexion and extension of the elbow joints, each ten times.
2. Internal and external rotation of the feet and flexion and extension of the feet, in the dorsal position with the arms firmly held against the body, each ten times.
3. Extension of the arms upward and laterally, first in the lying and then in the sitting postures, five times in every direction.
4. Elevation, flexion, extension and dropping of the legs, first one and then both, in the dorsal position, with the hands holding the head of the bed, each five times.
5. Deep (diaphragmatic) breathing, in the dorsal position with the arms held tightly against the body, five times.
6. Raising the upper part of the body, five times, in the dorsal position, with the hands resting on the hips or on the bed.
7. Rotation of the leg inward and outward, each five times, in the dorsal position, grasping the head of the bed with the hands.

8. Elevation of the small of the back with spreading of the knees, three times, in the dorsal position with the hands resting on the hips and drawing up of the feet to maximal flexion of the knee and hip joints.

9. Elevation of the arms, laterally and upward, with deep inspiration and expiration, five times, first in the lying and then in the sitting position.

These exercises are practised in postpartum and operative cases, in antepartum cases, and by patients awaiting operation. They are contraindicated only in patients who come to the hospital with thromboses and phlebitides. For women having varicosities of the subcutaneous veins the foot of the bed is elevated fifty cm. above the level in the intervals between the exercises.

ENDOCRINOLOGY

Thyroid Function and Dysmenorrhea.—With the aid of metabolism experiments Walther Schmitt (*Zentralblatt für Gynäkologie,* October 31, 1925) was enabled to show that in a large proportion of the patients with dysmenorrhea examined there was a disturbance of thyroid function. Hyperfunction was found twenty-two times and hypofunction seven times among forty cases. In most of the cases enlargement of the thyroid gland was found at the same time. In this material the author was unable to tell whether this was simply a coincidence of disturbed thyroid function and dysmenorrhea or whether an etiological relationship had existed. At any rate such a relationship, in view of the close relationships between the thyroid gland and both the genital organs and the nervous system, is very probable; this is suggested not only by the dysmenorrhea, but also by the fact that associated menstrual disurbances, a diminished fertility and signs of infantilism are frequently observed. In every case the experiments showed that not all cases of dysmenorrhea could be traced to the disease of the thyroid gland, as in some of the cases the thyroid function was unchanged. The truth of the assumption that at least in some of the cases the changed thyroid function produced the dysmenorrheic symptoms can be proved only when it is possible to cure the dysmenorrhea by a suitable action upon the thyroid gland. Only then can we determine whether we can achieve better results with local or thyroid gland treatment, or with a combination of both. It may be possible that in some cases, in which we have heretofore justly assumed the existence of a mechanical cause for the dysmenorrhea and the sterility (angular anteflexion, stenosis of the internal uterine os, and hypoplasia of the uterus), we may produce a functional stimulation of the uterus by influencing the thyroid gland, and thereby cure the mechanical obstruction and the dysmenorrhea.

Metabolic studies will show what cases are suitable for a thyroid gland treatment and in what way this can be accomplished.

Exophthalmic Goitre.—E. Goetsch (*American Journal of Surgery,* Vol. XXXIX, No. 12) maintains that the preoperative use of the x ray in acute cases, with the purpose of reducing the hyperthyroidism, is inadvisable. On the more active gland the inhibitory effect of the x ray can be produced only by the employment of more and larger doses of x ray, and such doses involve direct cellular injury. In a number of cases in which an acute thyroid had been previously treated by x ray, the results after resection were not found to be either as good or as prompt as in the untreated cases.

Iodine should not be given preoperatively unless operation is contemplated at the end of the ten day period. If a patient has thus been treated with iodine, with the usual lull in the disease and is then not operated upon, a period of true crisis follows, after six to eight weeks, with symptoms more severe than before the iodine administration. Again we have noticed that when this relapse following iodine administration has occurred a second period of iodine administration is not followed by the same improvement in symptoms and signs nor by the striking fall in the metabolic rate.

As regards the operation itself, the interval between ligation and excision should be sufficient to allow for the improvement which takes place in four to six weeks and occasionally requires from two to three months. A longer time than this is not advisable because of the increased difficulty of the excision operation due to the marked vascularity resulting from the establishment of collateral circulation in the gland. The author practically never allows the patient to go with ligation alone no matter how much the improvement, because of the tendency to relapse after collateral circulation has been established. The surgeon who operates on the gland nine months or longer after ligation, may find himself in considerable difficulty. It is my custom to do arterial ligation and not polar ligation, the former being sufficient and usually easier. Improvement occurs as a result of the diminished blood supply.

In recent years, on account of occasional relapse following single partial lobectomy, more radical resection of the gland has been practised. When possible three fourths to four fifths of the total gland substance is resected. It should be noted, however, that the ultimate result after single lobectomy, that is after one or two years, may be quite as good as or even better than after the more radical operation. Complete cures very often are obtained when sufficient time has elapsed after single lobectomy, the opposite lobe having reverted to the normal condition again. Such a person appears better and often feels better than the patient who has had the more extensive resection. The latter may show some thickening of tfhe skin, a somewhat dull reaction generally and in some cases a hypothyroidism or even a mild myxedema requiring thyroid therapy for its relief. This never occurs with the unilateral operation. I wish to emphasize that not all patients should, off hand, be submitted to the radical resection operation. It may be perferable to do a second lobectomy on a few patients, who may require it, than submit all the patients to a double resection that is not always needed. This is a point which future ultimate results will have to determine. Complete lobectomy, even if only one sided, is never carried out; a fringe of gland is allowed to remain posteriorly together with the posterior capsule of the gland, for the protection of the parathyroid glands and recurrent laryngeal nerve.

Pituitary Tumors.—Oskar Hirsch (*Wiener klinische Wochenschrift,* January 21, 1926) asserts that heretofore only the acromegalic and adiposogenital clinical forms of tumors of the hypophysis have been given most of the attention, and he therefore emphasizes the ocular form, which he has already described. His report is based on one hundred cases of pituitary tumors verified at operation.

The ocular form is characterized by visual disturbances without any striking change in the patient's habitus. Questioning of the patient almost always elicits a history of disturbances of the function of the sexual glands (impotence or menopause) and a physical examination usually reveals also some of the other symptoms found with pituitary tumors, such as loss of hair in the facial, axillary and pubic regions, disturbances in the secretion of sweat, somnolence, indifference and a low body temperature. The female mammary gland usually contains a secretion. The most important symptom in the disease picture is the disturbance of vision, such as reduction in visual acuity and limitation of the visual field, usually in the form of bitemporal hemianopsia, which is almost pathognomonic. This was found in eighty-four per cent. of the cases. Of equal importance is the presence of a primary atrophy of the optic nerve (eighty-nine per cent. of the cases). The rest of the cases (eleven per cent.) showed choked disc and neuritis. These two symptoms, especially the neuritis, should be considered as pointing to the presence of a pituitary tumor only, when all the other symptoms definitely point to a pituitary tumor.

The author observed thirty cases of acromegaly and he divides them into two forms: the malignant or the classical acromegaly, and the benign form. They are differentiated pathologically by the malignant and benign forms of the tumor, respectively. Clinically, they are differentiated by the visual disturbances.

In the benign form of acromegaly visual disturbances never appear in life; in the malignant form a progressive visual disturbance occurs. The visual disturbances only indicate the nature of the tumor. The positive findings in the benign form include usually a severe grade of hypertrichosis, less frequently genital disturbances, marked activity of the sweat and sebaceous glands, thickening of the skin up to the formation of folds, hypertrophy of the epithelium of the tongue, aside from enlargement of the tongue, marked defects in the dental enamel, disturbances in the growth of the nails, and in one case there was an early bilateral cataract. In the early stages there may be most severe headaches. There may be marked psychic disturbances. The lesion is a

benign adenoma of the anterior lobe of the hypophysis, consisting chiefly of eosinophile cells. True diabetes is found only in a few cases, but an alimentary glycosuria is more common.

The malignant form of acromegaly is called so because it is caused by a progressively growing and, therefore, clinically malignant tumor in contrast to the benign form, which is characterized by a stationary tumor. The characteristic features of the malignant form are the visual disturbances, a masklike change of the face, a thickened and markedly prominent, almost always enormous nose, thickening of the eyelids, enlargement of the lower jaw, a markedly everted lower lip, diastasis of the teeth, thickening of the tongue, pawlike hands and feet, kyphosis of the spine, hypertrophied ribs, etc. Hypertrichosis is rare. Genital disturbances are just as common in this group as in the others. The headaches are usually absent.

The Inevitable Damage Consequent Upon Goitre.—Frederick A. Coller (*Boston Medical and Surgical Journal,* September 17, 1925) says that endemic goitre is composed of colloid and adenomatous elements. In early life the colloid element predominates, after twenty-five the adenoma predominates. These changes are progressive and constant and in time, the length of which is well established, will cause the appearance of symptoms.

Frank hyperthyroidism caused by endemic goitre will be found to increase in frequency from the latter part of the third decade to the fifth and sixth decades when at least a third of the cases will have it.

Definite cardiovascular damage will appear in at least a quarter of those with hyperthyroidism and in a smaller but appreciable number of those with normal metabolic rates.

Endemic goitre is a precancerous lesion with an incidence of malignancy of at least three per cent.

Endemic goitre causes many mental changes of a minor, but disabling nature and in those with a psychopathic inheritance may excite the appearance of some mental abnormalities.

The progressive nature of the goitre pathology and the appearance of symptoms enable us to attack the goitre at a time when medication has ceased to be effective and when the changes begin to menace the health of the patient. The surgical removal of the adenomatous goitre at this time will prevent the appearance of the great morbidity otherwise to be expected.

The removal of adenomatous goitres should be advised on diagnosis in individuals after the age of twenty-five.

Functional Mitral Pseudostenosis in Basedow's Disease.—G. Bickel says (*Presse médicale,* August 29, 1925) that Basedow's disease shows a special predilection for the clinical picture considered pathognomonic of mitral stenosis, and presents it sometimes with surprising clearness in the absence of any valvular lesion. He considers that the appearance in connection with this disease of the physical signs of functional mitral pseudostenosis denotes the passage through an auriculoventricular orifice physiologically narrowed by the reflux of blood marking the close of ventricular diastole, of a stream of blood abnormally intensified by hyperkinetic contraction of the chamber, which is compelled by the increased accumulation of peripheral blood to add to its permanent function as a reservoir that of an auxiliary pump. This view, besides accounting for the rigid restriction of the physical signs of pseudostenosis to the presystolic period, at the same time explans their varying with the cardiac rhythm.

Extraction of a Parathyroid Hormone Which Will Prevent or Control Parathyroid Tetany and Which Regulates the Level of Blood Calcium.—J. B. Collip (*Journal of Biological Chemistry,* March, 1925) has prepared an extract made by acid hydrolysis of the parathyroid glands of the ox by which he is able to control or prevent tetany in parathyroidectomized dogs. Coincident with the clinical improvement following the use of the extract, the blood calcium level was raised or restored to normal. It was possible to give an overdose of the parathyroid preparation, and in such an evtent an abnormally high blood calcium content was found, and along with this blood picture there were associated typical clinical symptoms. The extract may be effective by the oral route of administration, but the best results were obtained by subcutaneous injection.

Action of Insulin in Adrenal Insufficiency.—G. Maranon (*Presse médicale,* December 19, 1925) adduces clinical observations which led him to the conclusion that adrenal insufficiency is associated with a state of unusual sensitiveness to insulin; otherwise harmless doses of this substance produce serious and even fatal effects in patients with Addison's disease. This hypersensitiveness to insulin is not due to the poor general condition of these patients, because it does not occur in other cachectic individuals, even though their blood pressure and blood sugar be low as in the Addisonian cases. The experimentally noted antagonism between adrenalin and insulin permits of the supposition that the reduction of adrenalin secretion in these cases is actually the cause of their hypersensitiveness to insulin. Adrenalin appears to be the physiological remedy for the untoward effects following insulin. In addition to the chemical phenomena, circulatory depression seems to play a part in the pathogenesis of these effects. In either instance the inability of the system to react quickly seems to exert a greater influence than the intensity of the disturbance *per se.* The clinical similarity between the hypoglycemic syndrome following insulin and the sudden grave symptoms presented by some Addisonians in the terminal stage of the disease is of interest, and suggests that a sudden hypoglycemic factor may be operative in the so-called Addisonian encephalopathy. Hypoglycemia is ordinarily present in adrenal insufficiency. Some recent cases of the author showed that in diabetics dying in coma in spite of insulin treatment which had overcome hyperglycemia and acidosis, severe lesions of the adrenals are present. This factor should be taken into account hereafter in cases in which coma appears after the acidosis has been mastered.

Endocrinosympathetic Etiology and Organotherapeutic Treatment of Psoriasis.—R. Carillon holds (*Revue Française d'Endocrinologie,* February, 1926) that psoriasis is a dermatosis appearing in individuals of long-standing constitutional predisposition. Sometimes there exists a psoriatic heredity, but much more frequently it is the sequel of an infectious malady, acute or chronic, tuberculosis and syphilis being most common. It often happens in this constitutional condition that one or more endocrine glands undergo alteration, but not by any means always the same one. Accompanying this, there constantly occurs a disturbance in the tonus of the vegetative nerves, producing a modification of nervous conduction in the sympathetic nerve. This nerve then loses its normal control of nutritive exchange, and impairment of metabolism results in the cells of the epidermis, such that the corneal layer becomes deficient in keratin. Cohesion is imperfect between the cells and the least irritation causes them to desquamate—traumatism or an infectious agent. When success is reached in curing psoriasis by internal medication, the nervous disturbance disappears and keratinization is carried on in the normal way. Treatment of psoriasis must affect both the occasional and the true cause, the former by external measures, the latter by rectifying sympathetic tonus. Extract of thymus gland and insulin are more frequently effective in accomplishing the latter object than are the other endocrine products.

Typhoid and Paratyphoid Thyroiditis: Efficacy of Vaccinotherapy.—A case of thyroiditis appearing without apparent goitre during an attack of typhoid fever with Eberth bacillus was reported by J. Sabrazès, S. M. Flye, and P. Alain (*Comptes Rendus de la Société de Biologie,* 1925, vol. 92). There was a severe inflammatory reaction in the right lobe, and extensive adenopathy extending into the subclavicular fossa. This painful thyroiditis was attended by hyperthyroidism, increased basal metabolism, and positive Goetsch test. Vaccinotherapy had a remarkable effect on the thyroid and lymphatic glands, which diminished rapidly in size, while the general condition of the patient was proportionally improved.

Histophysiology of the Thyroid Gland During the Evolution of a Fracture.—J. Goldner says (*Comptes Rendus de la Société de Biologie,* 1925, vol. 92) the undeniable rôle of the thyroid in relation to fractures consists in causing the appearance of the osteoid tissue in the provisional callus. The organic reactions are hyperfunctional, bringing about the new formation of interfollicular tissue, desquamation, and accumulation of hyperchromatophile colloid. The author is inclined to look on this hyperfunction of the thyroid coincident with the appearance of osteoid tissue as indicative of the participation of this gland in fixing calcium.

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Gregory Stragnell, M. D., *Editor*

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Medicolegal Notes.

CARE REQUIRED BY CHIROPRACTOR TO ASCERTAIN WHETHER AILMENT IS ONE TO WHICH HIS TREATMENT APPLIES

In an action in the Michigan courts, for malpractice against a chiropractic school graduate it appeared that the defendant had not complied with the law relative to registration of drugless healers in the state. Michigan Comp. Laws 1915, §6726. Plaintiff contended that as the defendant had no license to practise in Michigan, and yet held himself out to the public as competent to treat the bodily ailments of those patronizing him, he was practising medicine within the meaning of the Michigan statutes relating thereto, and that his conduct in treating the patient must be tested by the laws and rules applicable to licensed practitioners.

The Michigan Supreme Court held, Janssen v. Mulder, 232 Mich., 183, 205 N. W. 159, that, "while a failure to comply with the registration statute might subject the defendant to a criminal prosecution, such failure, coupled with a showing of treatment given, is not in itself sufficient on which to base a charge of malpractice. To maintain such an action the plaintiff must show that the result complained for was due to negligence or unskillful treatment. While not registered, the defendant was a graduate of a chiropractic school. He but assumed to treat human ailments in accordance with system taught in such school. This fact was well known to plaintiff. The burden was therefore cast upon her to show by competent evidence, not only that his treatment was injurious or not effective, but that the requisite care and skill was not exercised by him in administering it. It necessarily follows that such proof must be made by one engaged in treatment by similar methods to those employed by defendant. With the merits of the several drugless systems of relieving human ailments the courts have no concern. It is sufficient to say that many of our citizens believe in their efficacy and secure the services of those engaged in practising them. The treatment, given by any one of those practitioners, would probably be deemed improper and unskillful when judged by physicians who are taught to treat such ailments by the use of drugs and medicines. The unfairness of permitting the test as to whether a particular treatment was proper or skillful to be determined by one who uses a different method, or follows the teaching of another system, must be manifest.

"This is the first time a malpractice case involving this question has come before this court."

The court cited cases from other states in which questions more or less similar to this were presented, and where the conclusions reached were in harmony with the views above expressed.

The malpractice charged was in the treatment of plaintiff's child, who, according to the testimony of the county coroner who performed an autopsy, died of diphtheria. It was held that if, as the defendant testified, "the class of practitioners to which he belongs does not assume to treat infectious, communicable diseases, they may not be relieved of civil responsibility if they neglect to exercise reasonable care and skill to ascertain whether the person seeking their services is so afflicted;" and that it was incumbent on him to use reasonable care and skill to ascertain whether the patient's ailments were of the class to which his treatment applied and, if not, it was his duty to so advise the child's mother, in order that she might secure the services of one familiar with such ailments.

The court took judicial notice that diphtheria is an infectious, communicable disease. It held that "the plaintiff was entitled to show, if possible, that there is a customary and well known form of treatment used successfully by those of that particular profession who do profess to administer treatment to cure ailments of this nature, and that proper treatment by such a person would probably have afforded relief and saved the life of the child." Judgment for defendant on a directed verdict was therefore reversed and a new trial granted.

ORDER REQUIRING PAYMENT BY EMPLOYER FOR MEDICAL EXPENSES OF OPERATION HELD PROPER

In a claim by a workman for compensation it appeared that after an operation performed by one of the employer's physicians for a compound fracture of the left leg below the knee a sore developed in the left heel which persisted as an open wound for some months. About eighteen months after the injury, after an examination by a physician of the patient's own choosing, it was claimed for the patient that the constant pain he suffered was probably due to a nerve filament being caught in the scar on the heel, and that an operation would relieve it, and such operation was performed after the employer's physicians had refused to do so and declared the operation annecessary. An order of the Industrial Commission under Wis. St. 1923 §102.09, required payment of doctor, hospital and medical bills as a result of the operation, amounting to $587, and an attorney fee of $100. An appeal from a judgment affirming the award the employer contended that the operation was unnecessary. The Wisconsin Supreme Court held, Chain Belt. Co. v. Bayle, 206 N. W. 209, that since there was a dispute among the medical advisers as to the real cause of the constant pain which the claimant underwent after the injury and the necessity for the operation this presented a question of fact for the Industrial Commission, and, having determined that the operation was necessary, and it being conceded that the employer refused to consent to or perform it, this amounted, in substance, to such refusal under the statute as authorized the conclusion and order of the commission. Had the apparent result of the operation been different, the court said, the experiment might well have been decided to be at claimant's own risk and expense.

Whether or not the claimant's refusal to continued to wear a brace fitted to relieve the difficulty with his knee, as directed by the employer's physician, was an unreasonable refusal or neglect on his part under the statute was also held to be a question of fact for the Commission.

DEATH FROM HEAT STROKE NOT COMPENSABLE UNDER KENTUCKY STATUE

The Kentucky Court of Appeals holds, Smith v. Standard Sanitary Mfg. Co., 277 S. W. 806, that where the death of an employee engaged in hauling sand into a foundry with a wheelbarrow was the result of a heat stroke contracted in the course of his employment without trauma, the death was not compensable as an accident under Ky. St. §4880, which expressly provides that personal injury by accident as therein defined "shall not include diseases except where the disease is the natural and direct result of a traumatic injury by accident, nor shall they include the results of a preexisting disease." The Kentucky statute in this respect differs from most if not all other laws, and the court points out that the purpose of this peculiarity "was to exclude from the operation of the statute all occupational diseases not resultant from trauma in order to avoid the confusion with reference thereto under the compensation acts in other jurisdictions."

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Failures and Successes in Radiotherapy of Cancer*

HERMAN B. PHILIPS, M.D.
New York

Only too often the casual report of the results of radiotherapy of cancer deals only with the successes; the failures are dismissed as a rule, with very brief comment. As much, and possibly more, can be learned from the analysis of the failures and undoubtedly the greatest amount of good can be gained from a correlated analysis of both failures and successes. The limited time allowed for this presentation prevents any detailed discussion of cases, and for that reason only essential features will be given. The material includes, almost exclusively, cases seen in private practice. Hospital and clinical cases are excluded with few exceptions, as are also a few patients not entirely under my care in private work, so that the series represents only those treated without interference or dictation and with maximum personal attention. A total number of seventy-five cases are included. Treatments were with radium and x ray, of the former, interstitial and pack treatments, of the latter, with voltage varying from 60,000 to 220,000.

Approximately at the end of one year's experience with massive x ray doses given in short periods of time, I concluded that such a method of treatment not only jeopardizes the chances of success, but also decreases in a good many instances the duration of life. Similar conclusions were expressed by other radiotherapists and this method of treatment was abandoned about two years ago. Since that time deep röntgen treatments are extended over long periods of time, and given in small oft repeated doses. Such a technic has of late been described by Morgan (1) of Philadelphia. In this way it is possible to give a greater dose than the patient could otherwise tolerate, eliminate a great deal of röntgen sickness and associated discomforts, and from a comparison with results secured previously and since the inception of this method, to secure unquestionably better results. An additional advantage is the securing of a prolonged saturation period of lethal radiation effects, which is unquestionably desirable in the treatment of malignancy. The advantages of this particular feature of radiotherapy has been emphasized by Pfahler of Philadelphia.

In this analysis the total number of cases of each type will be reported first, the method of treatment briefly outlined, the results described, a criticism of the method, if any, on the basis of results, and additional comment will be expressed in the nature of conclusions from the experiences. I purposely omit theoretical considerations, particularly pertaining to the pathology of cancer, except in so far as it has some practical bearing on the subject presented to you at this time. The presentation is essentially one of practical considerations, with the sole view of bettering the results in this only too hopeless disease. I desire, earnestly, to analyze critically this work with but one point of view, that is, the improvement in results and the prolongation of the patient's life, irrespective of all other considerations. It is desirable at this time to call attention to the fact that special features of malignancy, and its treatment, will be considered. Prominent among these are, 1, the relative value of radiotherapy and radiumtherapy, or a combination of both; 2, the value of prophylactic radiation; 3, the value of postoperative radiation; 4, considerations of dangers of biopsy; 5, evaluation of the relative merits of surgery and radiation; 6, influence of constitutional diseases, if present; 7, general factors, such as age, duration and distribution of malignancy, and other factors well recognized in influencing the outcome in surgical treatment and obtaining also for radiation treatment. It should be stated that no cases are included in this report which were not treated more than six months ago and the series extends back six years since my return to practise after the war.

The individual types of tumors will now be considered.

CARCINOMA OF THE SKIN

Ten epitheliomas were treated, three of them large, rodent ulcers. Treatment was with interstitial radiation and radium packs and intensive x ray over the adjoining lymph nodes. Two of them recurred and were treated again with the production of keratosis and telangiectasia. These recurrences were ultimately electrocoagulated and since that time the patients have been entirely well. All healed with fine cosmetic results. Two have been well over five years.

BUCCAL CARCINOMA

Two cases were treated, one of the tongue without glandular metastases, and the other of the cheek close to the alveolar margin with enlarged cervical lymph nodes. The first of these has been cured over three years, and the other for over two years. The treat-

*Read before the Harlem Medical Society, March 3, 1926.

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ment was with radium needles, supplemented by intensive x ray crossfiring of the neck.

CARCINOMA OF ESOPHAGUS

Three cases were treated. Two far advanced cases were uninfluenced and in the other the tumor completely disappeared and the patient has been clinically free from symptoms for four years. The patient is still alive and well. The diagnosis in these cases was clinical and röntgenological. I do not believe in subjecting the patient to biopsy, for reasons which will be stated subsequently, and I feel also that all other diagnostic instrumentation should be avoided, if possible. Esophagoscopy in malignancy is veritably a crude type of manipulation even in skilled hands, and I feel it jeopardizes the chances of a cure and should be used only when indispensible. Because of the surgical ineccessibility of this disease, Crile (2), in a recent discourse on the surgical treatment of carcinoma, has expressed the prevalent thought that radium and deep x ray therapy present some basis for hope, especially in the earlier cases. Bowing (3), of Rochester, Minnesota, mentions a three year irradiation cure of carcinoma of the esophagus. Guisez (4) reports a number of three year cures and marked improvement in all of the recent cases treated and is optimistic as to the future, owing to the marked improvement in technic.

CARCINOMA OF THE STOMACH

Two cases were treated, one inoperable and the other postoperative. Palliative results were secured in both but the results were of very short duration. Because of the close proximity of the stomach to and consequent damage of the liver and adrenals, the effects of radiation are not encouraging, although a special technic devised by Hohlfelder (5) was followed in this inoperable case. Nevertheless, only palliative results were secured. Carcinoma of the stomach is still at this time a purely surgical condition.

CARCINOMA OF THE LIVER

Three cases were treated. Two were uninfluenced and in the third case there was considerable retrogression in the size of the tumor with marked improvement in the health of the patient, who finally suffered recurrence and succumbed to the disease. Hyperpyrexia was noticed in two of the cases, preceding the terminus, and in all probability was a result of the radiation effects on the liver.

CARCINOMA OF THE DESCENDING COLON

One case was treated with radium packs, without any results whatsoever.

CARCINOMA OF THE RECTUM

Five cases were treated. Two were temporarily improved with marked shrinkage of the lesions. Two cases were not affected by the treatment and in the last case disappearance of all apparent lesions was secured but it was necessary to produce an intense congestive radiation catarrh to secure results described. Here again Crile (2) has conceded that radiation therapy promises to supplant surgery, for the rectum is readily accessible for the implantation of radiation and portals of entry are available for deep x ray. He recommends colostomy plus radiation.

CARCINOMA OF TONSILS

Two cases were treated with interstitial radium radiation, electrocoagulation and intensive x ray over the cervical nodes. One case was rewarded with success and one failed. The failure was in a diabetic patient and presented also involvement of the cervical glands. She was markedly improved for a period of three months. Her life was prolonged in comfort. The other case has only been observed for six months and is without any recurrence locally or any adenopathy at this time. Further comment is unwarranted, because of the shortness of the period of observation.

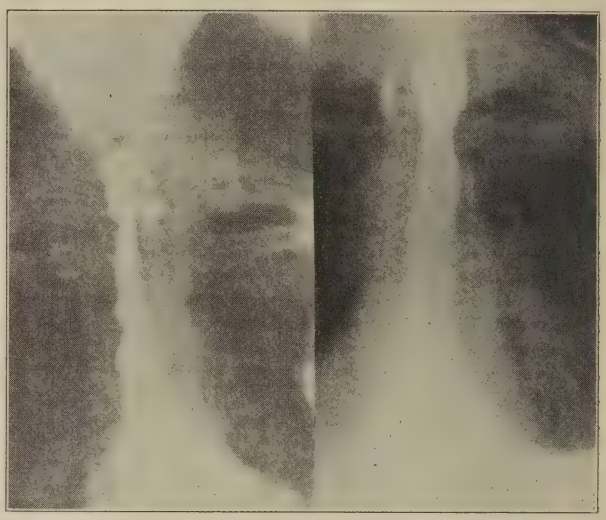

Fig. 1.—Mrs. B., aged fifty-eight, clinical and röntgenological carcinoma of esophagus with large perforating malignant ulcer in upper fifth. Emaciated, cachectic; had lost more than fifty pounds in weight; could only swallow fluids. Illustration on left shows condition before radiation was started. Illustration on right shows condition six months after beginning of treatment. Radium tubes internally in the esophagus and x ray cross firing through the chest was the technic used. Patient regained all of lost weight; experiences no difficulty whatsoever in deglutition; has been perfectly well for over four years and is alive at this time.

HODGKIN'S DISEASE

Two cases were treated successfully, one without any recurrence for three years and the other for over a period of two years.

LYMPHOSARCOMA

Two cases were treated, one with generalized involvement. Complete disappearance of all palpable tumors was accomplished rapidly with complete relief of all symptoms for approximately one and three years. In the former case the patient succumbed prematurely to the disease, apparently from abdominal metastases.

CARCINOMA OF THYROID

Two cases were treated, one with partial symptomatic improvement with fibrous and calcific replacement of most of the gland. The tumor diminished slightly in size, but still is present, large and uncomfortable. When first seen this patient was extremely dyspneic and a tracheotomy seemed necessary at any moment, but this feature disappeared and she has been fairly comfortable for four years and is still alive. In the second case, when originally seen the patient had metastases in the lung and palliative results only were secured for a few months.

CARCINOMA OF THE MEDIASTINUM

One case was treated, but not influenced in the slightest degree by intense x ray crossfire radiation.

CARCINOMA OF LUNG

Four cases were treated. In one advanced and hopeless case a metastatic supraclavicular node was

FIG. 2.—Miss G., aged thirty-two, carcinoma of breast, metastases in second, third and fourth right ribs anteriorly, along with sternal nodules and supraclavicular nodes, which appeared a few months after radical operation. Radiation with radium needles and intensive x ray cross firing resulted in complete disappearance of all evidences of disease for approximately three years, when lumbar spine and internal metastases developed and proved to be fatal. Figure on left shows destruction and absorption of the anterior portion of the second, third and fourth ribs. Figure on right shows bone regeneration of the second, third and fourth ribs clear to costocartilaginous junction.

removed for biopsy. In less than two weeks' time, after the biopsy, mitotic cells were recovered in the patient's urine. In about six weeks' time he died of general metastases. Treated in parallel with this case was another of neoplasm of the lung, with almost identical distribution which was radiated intensively by x ray and not biopsied. The tumor and all metastases disappeared with complete freedom of all manifestations of the disease over a year and a half, when fatal recurrences occurred. The third case, in a man over seventy-four years of age with

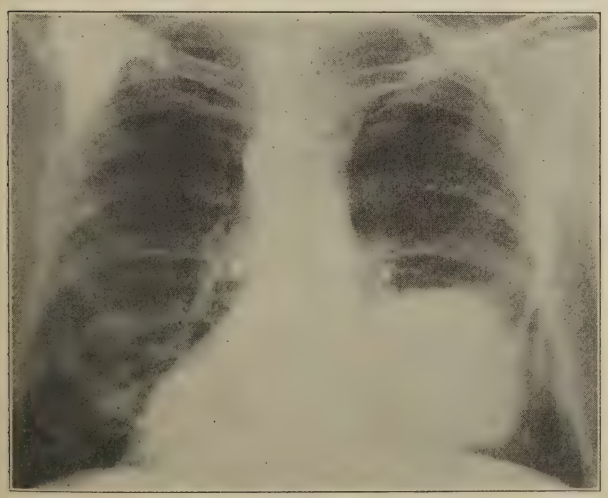

FIG. 3.—Mr. S., aged seventy-four, metastatic malignant carcinoma of right lung with hemoptosis, cough and dyspnea, before radiation.

metastatic carcinoma of the lung, was under observation for over six months' time with almost complete retrogression of the tumor and was symptom free during this time. Another case, with metastases from carcinoma of the thyroid, was improved with moderate shrinkage of the tumor and stoppage of hemoptysis.

CARCINOMA OF THE BREAST

Twenty-five cases were treated. Of this number three received preoperative and postoperative radiation. All of these patients died, after two to three years' freedom from the disease, but two of them were in a far advanced and hopeless stage when seen. Postoperative radiation was carried out in all of these cases and in this number six patients are dead and nineteen alive and well without any signs of recurrence. As regards metastases, seven cases were treated. All patients were improved to the extent of complete disappearance of the lesions for a period varying from six months to four years. To my knowledge only one patient is alive at this time. Of

FIG. 4.—After three months' radiation with intensive short wave technic, symptoms completely disappeared and tumor almost completely resolved. Patient died from primary intraabdominal focus three and a half months later.

this number two very strikingly successful temporary results were secured, one in metastases of the upper end of the femur and the other in the ribs.

Two unusual experiences were encountered in this study, to which attention should be called. In one instance carcinoma developed in the remaining breast of a woman who was being treated for recurrent nodes over the sternum. Notwithstanding homogeneous radiation being given over the entire chest wall and the fact that the sternum nodule disappeared, the malignancy of the remaining breast developed insidiously during the course of treatment. The other instance is quite similar. Homogeneous radiation was given over the breast and axillary region of a young woman (inoperable) with a very malignant adenocarcinoma with almost complete disappearance of the axillary metastases, while a violent uncontrollable growth progressed throughout the breast.

In two inoperable cases which were treated only with radiation, one patient had complete disappearance of metastatic nodule in the remaining breast and

the other had the initial lesion, the size of a walnut, shrink to a very hard fibrous mass (eight months' observation). It is unfortunate that my series has no parallel nonradiated surgically treated cases for comparative purposes, nevertheless, a few conclusions are justifiable from the analysis of this small series. Prophylactic radiation on a basis of experimental animal research should be followed where possible, notwithstanding the failures of the three cases I reported, which were far advanced and hopeless. Murphy has shown that transplanted tumors will not grow in radiated sites. Some experiments reported by Schreiner and Simpson (6) are worthy of record at this time. Malignant tissue which was radiated and then inserted into the body would not grow, nor would nonradiated tissue planted in a radiated site.

Postoperative treatment in my series has resulted in approximately sixty per cent. freedom from recurrence over a prolonged period of observation. Lee and Herendeen (7) assert, on a basis of analysis of ninety-two breast cases from various hospitals and surgeons, that preoperative and postoperative radiation is justifiable. In the cases treated with surgery alone twenty-four per cent. of the patients lived three years; of those operated upon and receiving postoperative radiation thirty-nine per cent. lived three years, and of those patients who received preoperative and postoperative radiation fifty-two per cent. lived three years. Pfahler's (8) results in all cases, early and late, operable and advanced, inoperable and recurrent, were fifty per cent. of the patients alive for three years and twenty-seven per cent. alive five years and more. In the postoperative group without glandular involvement eighty-one per cent. were alive for three years and seventy-seven per cent. alive for five years and more. In the postoperative group with glandular involvement, fifty-six per cent. were alive for three years and thirty-eight per cent. alive for five years and more. The treatment of metastases when discreet and not generalized, is satisfactory with frequent complete disappearance of the lesions and accompanying symptoms. When the metastases are too disseminated and generalized it is futile to attempt radiation, but a few metastatic foci can be handled successfully as a rule. However, the result is not permanent in a great number of cases, but merely a palliative procedure. I have no reason for feeling that radiation is harmful in any way and for that reason recommend it preoperatively and postoperatively and earnestly advise radiation for metastases when not too disseminated.

CARCINOMA OF THE OVARY

Three cases of this character were treated. One patient in a hopeless inoperable condition, subjected to exploratory laparotomy, was radiated, with complete disappearance of all clinical symptoms of tumor for a period of one and a half years, when the condition returned and proved fatal. Another patient was radiated postoperatively, where apparent complete removal of the tumor was accomplished with complete freedom from symptoms for over three years. Radiation in this instance is of questionable value, inasmuch as the entire disease may have been removed. In a third case with slight ascites and generalized carcinomatosis of the abdominal cavity the patient was not benefited.

CARCINOMA OF THE UTERUS

Two failures were recorded in the treatment of carcinoma of the body of the uterus, which can be attributed to the extreme obesity of the patient and inaccessibility of the tumor. These patients were ultimately subjected to hysterectomy, although poor operative risks, and the futility of attempting to treat extremely obese women was demonstrated in the pathological specimens. Although in both of these cases the hemorrhage ceased and the growth of the tumors was arrested apparently, for periods of over two years, ultimately the uteri had to be removed. Combined intrauterine radium application and intensive x ray crossfire was used without permanent success.

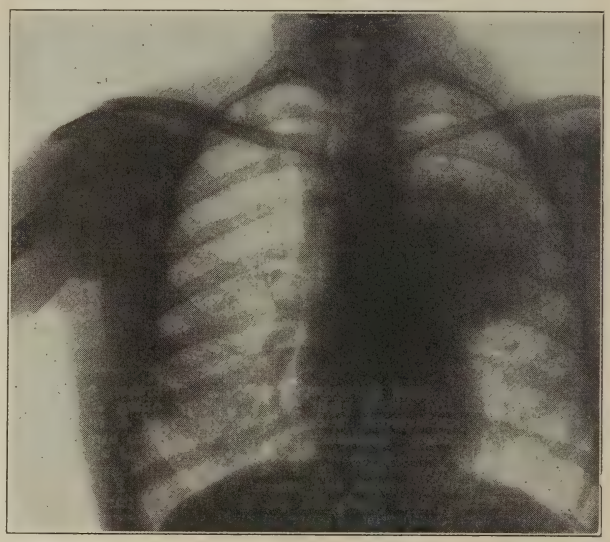

Fig. 5.—Mrs. R., aged twenty-six, primary neoplasm of lung with supraclavicular and mediastinal and axillary adenopathy. Cachectic, anemic, underweight, night sweats and marked dyspnea. Fig. 5, ectic, anemic, underweight, night sweats and marked dyspnea before radiation.

CARCINOMA OF THE CERVIX

As regards carcinoma of the cervix, the results are reversed, because, unquestionably, of the accessibility of the tumor. Treatments comprise radium needling and tubes and intensive x ray crossfiring. Three cases, recurrences after operation, were radiated with gratifying palliative results and complete disappearance of all evidences of the tumor from two months to over one year. However, all the patients in this group have died. In six other patients not operated on, two with extensions of the tumor over the vaginal vault and one with a perforation of the bladder, the results were ideal with complete disappearance of all symptoms, from one year to four years.

CONCLUSIONS

The conclusions from this group of uterine tumors corresponds generally with results published elsewhere. Carcinoma of the uterus is primarily a surgical condition and carcinoma of the cervix is primarily a radiation problem. The less of surgery in carcinoma of the cervix, the better the outcome. Crile (2) has expressed himself concisely on this subject and states that "We are turning over all our cases for radium and deep x ray therapy in cases of carcinoma of the cervix. However, we still advocate vaginal hysterectomy for carcinoma of the fundus."

CARCINOMA OF THE URINARY TRACT

One case of hypernephroma was treated with x ray and radium packs. The patient was improved temporarily with slight shrinkage of the tumor and loss of pain, but succumbed ultimately to the disease. One case of carcinoma of the bladder with extensive involvement was treated with combined radium, interstitial radiation and intensive x ray crossfire. Intense radiation cystitis occurred, but the tumor completely disappeared for over a period of one and a half years. The patient is alive and well at this time.

FIBROSARCOMA

Two cases were treated, one of the hand and the other of the foot, with marked temporary retrogression of the tumor, but with ultimate fatal outcome. Treatment was with combined radium, interstitial radiation and intensive x ray crossfire.

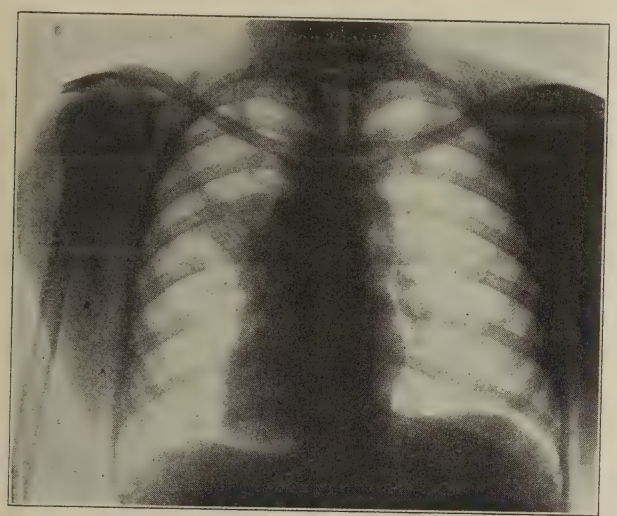

FIG. 6.—After intensive x ray cross firing radiation; about three months later complete clinical cure and disappearance of all röntgenological evidences of tumor. Patient free from symptoms for one and a half years, when fatal recurrences supervened, which did not respond to further treatment.

CANCER OF THE BONE

Four cases of osteogenic sarcoma of the bone, three of the long bones and one of the scapula, were treated with intensive x ray radiation, interstitial radiation and radium packs, without affecting the outcome in the slightest degree. One case of Ewing tumor of the femur was treated with complete disappearance of all symptoms for approximately one year, when a recurrence occurred with a second lesion in the humerus. Attention is called to the disappearance of all subjective and objective symptoms, including röntgenological evidences of the tumor, in the humerus, when the recurrence in the femur was radiated. Such phenomena have been observed in the radiation of skin diseases, warts and in lymphosarcoma, but according to recent comment on this case by Dr. Ewing, this phenomenon has never been observed before in this condition. Four cases of metastatic bone carcinoma were treated. One case in particular with extensive involvement of the ribs, was treated with interstitial radium radiation, radium packs and heavy x ray crossfiring, the other cases by intensive x ray crossfire or radium packs. The disappearance of these tumors over periods of from one to three years was secured.

In reviewing the preceding, one is impressed by the fact that while palliative results is the rule with radiation of tumors, permanence of results is deplorably infrequent. As Dr. Mayo has said, "Radiation therapy is at its best a triumph and a despair. It often does so much good that the patient and family begin to look for cure, failure is the result, and radiation therapy is unjustly brought into disrepute for a meritorious performance." It has been my privilege in the last few years to have at one time over twenty instances of most gratifying clinical cures of otherwise hopeless malignancy, and to see these patients, with a few exceptins, fall by the wayside one by one, as a result of recurrences which did not yield to further treatment. The failure of permanency in the results of radiation therapy, in the majority of cases, detracts in no way from the conceded value of this method of treatment in prolonging life in comfort, and accomplishing in a good many instances almost the impossible and incredible, far beyond the possibilities of any other method of treatment. It is apparent also that the greatest number of successes obtained in these cases is due to the peculiar susceptibility of the tumor; in other words, our successes are fundamentally based on the good fortune of accessibility of the type of malignancy to radiation or to the accessibility of the tumor, in other words, our successes are fundamentally based on the good fortune of accessibility and not completely upon the inherent uniformly successful qualities of our therapeutic agent. It is further apparent that more permanency and the greatest good can be obtained in the treatment of malignancy by a combination of surgery and radiation. Radiation, by lowering the virulence of the malignancy and surgery by its total enucleation where possible.

The well known fact, expressed by Judd (9) of the Mayo Clinic, to the effect that "Certain cases of cancer seem to be hopeless from the beginning, and surgery or any other method of treatment does not influence the progress of the neoplasm whatsoever, nevertheless, in the great majority of cases, the course can be influenced by radiation or surgery, or both." A number of factors favorably influence the course of the disease irrespective of the character of the treatment, and these are: the duration of the condition, its location and clinical virulence, the age and health of the patient, the presence or absence of systemic disease, accessibility of the tumor, the success and skill in the technic of treatment, and the selection of the proper form of treatment. The last named question deserves special comment, inasmuch as sufficient records have accumulated to make the fact conceded by surgeons as well as radiotherapists, that certain types of malignancy should no longer be treated by surgery. To elucidate further, it is conceded generally that malignancy of the skin, esophagus, rectum, uterine cervix, and lymph adenopathy including Hodgkin's disease, are best treated by radiation, whereas it is conceded by the foremost surgeons of the country that in all other cancers, in almost all instances, surgery should be combined with radiation to get the best results. The choice of radiation technic depends upon the experience and skill of the radiotherapist and in a great many instances combined radium and x ray treatments have demonstrated greater efficacy than either agent alone. Dant-

witz (10) has shown that combinations of radium and x ray have been more beneficial than x ray alone.

The causes of failures in radiotherapy are in common with failures in surgery. The treatment of cancer is postponed until the condition is too disseminated and the patient too weakened by the disease to do justice to the condition or the method of treatment. As far as the radiation treatment is concerned, it is possible that a good many of the failures are due to over treatment, and in other instances to under treatment. The effect of radiation is, in my mind, directly proportional to the amount of radiation expended. Small doses will stimulate, greater doses will depress, the proper dose will destroy cancer tissue and exceeding this proper dose will lower the tissue resistance so that the effect will be equivalent to one of stimulation and the dose used must be so gauged as to have the desired effect. The factor of general resistance to radiation must also be considered, because unquestionably the use of little discretion in giving huge doses of x ray radiation without keeping in mind the condition of the individual, contributes to a great number of failures. The use of tonics, transfusions, rest periods, small dose technic are all important factors in preventing to some extent the failures in treatment. The importance of consistent "follow up" in radiation therapy cannot be emphasized sufficiently and no less than four cases of premature death were recorded in my series from neglect on the part of the patient, in this most important phase of the treatment. Examinations at frequent intervals and education of patients to enable them to detect early unfavorable symptoms of recurrence are absolutely essential.

The treatment of systemic conditions, such as nephritis and diabetes, secondary anemia, etc., must be given proper consideration and attention. The use of a divided small dose technic mentioned previously, frequently makes it possible to treat a patient and produce desirable and worthwhile palliative results in otherwise hopeless conditions. The most essential feature of all is one which cannot be dwelt upon sufficiently at all times, namely, the proper education of the layman so that malignancy will be recognized early and the case referred to the proper channels before the condition is hopeless. It is also desirable to educate the general practitioner so that he can direct his patient along the right channels for the proper treatment without additional delay. The tragedy that frequently confronts the radiotherapist is a patient who has not only been guilty of neglecting herself or himself to the extent of permitting a hopeless condition to develop to such a stage that any treatment would be undertaken with reluctance, but frequently cases are called to our attention where obviously the wrong treatments have been instituted and a patient been made to suffer mutilating operations needlessly or extensive and damaging radiation equally needlessly. The happy medium of a consultant for the general practitioner is a clinical pathologist, if I may use such a term, who knows the limitations as well as the merits of the different methods of treatment of malignancy and will impartially advise the general practitioner what course his patient should take. The question of surgery versus radiation must necessarily be based on, primarily, the question of accessibility and distribution of the malignancy, as well as the susceptibility of the condition to radiation; and the existing consensus of opinion as to the preferred method of treatment based on statistical surveys. Combination of surgery and radiation unquestionably will give the best results in the future and it is very probable that the present high mortality in gastrointestinal malignancy will be much lowered, when an intimate cooperation is established between radiotherapists and surgeons, so that when any laparotomy is performed the radiotherapist can be at hand with his needles or radium seeds, to take advantage of the open abdomen, and a much neglected opportunity will be afforded of applying this efficient method of interstitial radiation in otherwise hopeless conditions. All will concede the preference for the complete surgical removal of a focus of malignancy whether radiated or not. However, elaborate microscopic studies and clinical observations have demonstrated the futility of hoping for a complete enucleation of malignancy, except in unusual cases, and the next best procedure is a faithful application of radio therapy alone or combined with surgery.

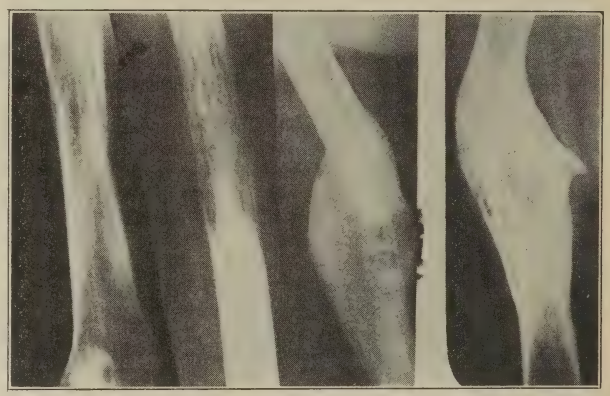

Fig. 7.—Mrs. C., aged twenty-two, Ewing tumor (primary endothelioma) of femur. Sustained pathological fracture day following first x rays. Markedly deformed fractured femur radiated with radium packs and several rounds of deep x ray, voltage varying from 140 K.V. to 200 K.V. Badly deformed pathological fracture united with dense bone proliferation and disappearance of all röntgenological evidences of tumor. Fatal central nervous system involvement about fifteen months after apparent cure of femur lesion. Slight activity in femur lesion at the end of one year, which disappeared after further radiation. (See text under carcinoma of bone.)

This important discussion of practical considerations of malignancy cannot be concluded without some elaboration on the question of the dangers of biopsy. I cannot express the question to you more forcibly than to quote several passages from a recent article by Dr. Ewing (11) on this subject. He "decries the importance placed on a simple report of cancer or sarcoma and emphasizes the necessity for a knowledge of clinical features of the case and not merely histological reports. The cancer surgeon should become highly proficient in the recognition of cancer by sight and touch. No aid from frozen sections can replace this capacity. Röntgenology has greatly enlarged the opportunity for the study of gross anatomy of tumors and should correspondingly diminish the indications for biopsies and exploratory operations. In the field of bone tumors and several other departments it has been an indispensable aid in diagnosis. There are comparatively few bone tumors that cannot be somewhat accurately classed by means of röntgenography and clinical findings. I have often

found that conclusions drawn from röntgenography lead to rather more serviceable results than the study of fragments of tumor tissues taken under difficulties. Biopsy is a method that renders great service in the recognition of tumors but is one that should be practised with the greatest caution. The incision of encapsulated malignant tumors growing under pressure is nearly always harmful and may be disastrous. The therapeutic test by radiation is generally far better and safer. The incision of bone tumors for diagnosis is one of the last steps to be taken, for such incisions stimulate growth by release of pressure, lead to infection, or uncontrollable hemorrhage and moreover the portion of tissue fails to yield a satisfactory conclusion or even leads to errors that might have been avoided by other methods of study. The results of radiation therapy have revealed some interesting data, which may be useful in diagnosis. The susceptibility of giant cell tumors of bone, cellular myeloma and round cell tumors offer a means of differential diagnosis. The response of lymphosarcomas which melt down rapidly under radiation and Hodgkin's disease granulomas which are more resistant, is so characteristic as to be valuable as diagnostic data. Areas of chronic mastitis become swollen and indurated under radiation while cancerous masses gradually recede leaving very hard cicatrices." Other similar information of differential diagnostic value, based on radiation susceptibility are enumerated, but time does not permit their inclusion in this presentation. The dangers of biopsy are apparent in the small series of cases of cervical cancer, which I am reporting. The best results were obtained in those cases not subjected to any operative procedure. Heyman (12) of Stockholm, in a review of a very large series of cases came to the conclusion that biopsies impaired the tendency to heal and favored dissemination of the tumor and unquestionably contributed to failures in the radiotherapy of cancer.

CONCLUSIONS

1. The selection of the method of treatment in malignancy is determined by the accessibility to radiation and surgery and susceptibility of the tumor to radiation.

2. The choice must also be made on a basis of statistical reviews of results of surgical and radiation methods of treatment of the particular type of tumor.

3. Certain types of malignancies are unquestionably treated better by radiation alone, others by surgery alone and a third class by a combination of both. These have been outlined in the body of the article.

4. The success of radiation therapy depends upon early recognition and treatment of the condition, accessibility and radiation susceptibility. Tonic and supportive treatment is indispensible. The small oft repeated dose technic appears preferable to massive doses in a short period of time.

5. Palliative results can be secured in a great majority of cases, and should be attempted with few exceptions. My series includes at least fifteen inoperable and hopeless cases whose lives were prolonged from six months to four years or more, in comfort, the individuals being restored to usual working capacity. Of this number three present clinical cures of over three years' time.

6. A more intimate combination of radiation and surgery will probably improve results in the treatment of cancer of the gastrointestinal tract.

7. Biopsy, manipulation and instrumentation of tumors are dangerous and should be avoided.

9 West Sixty-eighth Street.

The author's references will appear in his reprints.

Acute Pericarditis

HERMAN ELWYN, M.D.
New York

(*Concluded from page* 9)

When the presence of a pericarditis is discovered in an individual suffering from active pulmonary tuberculosis it may be assumed that the pericarditis is also tuberculous, although this is not necessarily so. When a hemorrhagic fluid is obtained by aspiration of the pericardium in such an individual this is very significant. Tubercle bacilli are rarely found in the exudate, but inoculation in a guineapig usually gives a positive result. It must be kept in mind that tuberculous pericarditis may occur as a complication of genitourinary tuberculosis. In a case of advanced renal tuberculosis a pericardial friction sound was discovered on routine examination, which persisted for six weeks until death. Tuberculous pericarditis was found at the autopsy.

The course of tuberculous pericarditis is usually a chronic one lasting from four to eight months and terminating either in death or in the formation of an adherent pericardium. When the latter occurs the case presents clinically the consequences of an obliteration of the pericardium. With these we are not concerned here. The friction sound is frequently heard for a long period. Schrötter mentions a case in which the friction sound was heard for four months.

AS A COMPLICATION OF PNEUMONIA

The frequency with which pericarditis occurs in the course of lobar pneumonia differs considerably in the reports from the various clinics. Osler (24) found it thirty-five times among 658 cases of pneumonia, or 5.3 per cent. Fraenkel (25) found it in 0.9 per cent. of over 700 cases. Of Waller's eighty-three cases of pericarditis nine were due to pneumonia. Among the 427 cases of lobar pneumonia which I had occasion to study at Camp Greene, North Carolina, in 1918, pericarditis occurred eight times, or 1.8 per cent. (26). Three of these cases, in which no evidence of fluid could be detected, but in which the friction sound was distinctly heard, recovered. In the rest the exudate was hemorrhagic or purulent. Purulent pericarditis, although not common, is usually

a fatal complication in lobar pneumonia. The pneumococcus, streptococcus, or staphylococcus may be found in the exudate. In the cases which I reported from Camp Greene the streptococcus was found, although the pneumonia was due to a pneumococcus.

The clinical recognition of the presence of pericarditis in the course of lobar pneumonia is always difficult and at times impossible. Any pain which is felt by the patient is either overshadowed by pain at the site of the pneumonia or it is assumed to be pleuritic in origin. Usually there is no pain. A daily routine examination of the heart will result in the discovery of a pericardial friction sound when this is present. Just as frequently such a sound is not heard although an exudate is found postmortem. When the pericardial cavity is filled with a fluid exudate the evidence on percussion may be quite definite. It is astonishing, however, how large a quantity of pus, even up to two litres, may be found in the pericardium at autopsy without its presence having been suspected. Perhaps the reason for this may be found in the failure of percussion to be of any help in some of these cases. Anteriorly the heart dullness may merge into pneumonic dullness, and similarly, dullness posteriorly over the left lower lobe is either due to the pneumonia or ascribed to the presence of fluid in the pleural cavity.

Auscultation is frequently of no help. It seems that the heart sounds can be propagated undiminished even through a large layer of pus. When the presence of an exudate in the pericardium is definitely suspected in the course of a pneumonia aspiration is indicated to determine whether pus is present or not. I remember a case of lobar pneumonia which was carefully studied by the attending physician and his staff and then presented to an assembled class of students, without the presence of a pericarditis having been suspected. The patient died about twelve hours later and more than a pint of purulent exudate was found in the pericardium at the autopsy.

IN UREMIA

Acute pericarditis is a frequent occurrence in true chronic uremia. The frequency with which acute pericarditis occurs in chronic uremia is not at all evident from published statistical tables, especially as most of these have been published before the days of proper methods in blood chemistry. In my experience pericarditis occurs in the greater number of cases of chronic glomerulonephritis in the end stage. The exudate is either fibrinous or serofibrinous. The amount of fluid is usually not large, about 50 to 200 c. c., although occasionally larger quantities, even up to 1,000 c. c., are met with. The exudate is rarely hemorrhagic. The cause of the pericarditis in chronic uremia has been the subject of frequent investigations and a good deal of discussion. The exudate has been found to be sterile by Banti and others, although some investigators have found the pneumococcus and the colon bacillus in some cases. In these cases the organism is probably a secondary invader.

Acute pericarditis in chronic uremia does not occur until renal insufficiency is far advanced. The total nonprotein nitrogen in the blood is found to be above 100 mgm. per 100 c. c., and usually in the neighborhood of 150 mgm. or higher. When pericarditis occurs with the figures for the nonprotein nitrogen below 100 mgm. per 100 c. c. of blood, the cause of the pericarditis must be sought elsewhere than in uremia. In many such cases in elderly people with high blood pressure it is due to myocardial infarction. When it occurs in chronic uremia it is accompanied by the other symptoms, nervous, visceral, constitutional, of chronic uremia. The main symptoms are: fatigue, drowsiness, muscular twitching, nausea and vomiting, irregular breathing or the Kussmaul type of breathing, mental symptoms, pallor, anemia, a urinous odor from the mouth, diminution in the output of urine, fixation of the specific gravity of the urine, albuminuric retinitis, and an increase in the blood of the nonprotein nitrogenous substances, urea, uric acid, and creatinine. The blood pressure is increased, or having been previously increased, has fallen to apparently normal figures.

The urea constitutes the greater part of the nonprotein nitrogenous substances in the blood. When retained in the blood stream to a sufficient amount there is a vicarious attempt to excrete the urea by the gastrointestinal tract, the salivary glands, and the skin. All the tissues in the body become saturated with urea. This saturation which affects the serous membranes also results in the excretion of urea by the serous cells into the serous fluid where it is found in as high a concentration as in the blood. The presence of urea in the serous fluid of the pericardium is possibly the cause of an irritation of the serous layer with the formation of an acute pericarditis. Any organisms found are probably secondary invaders.

Clinically, pericarditis in chronic uremia manifests itself by the friction sound. Precordial pain is present at times, but more often absent. The amount of fluid is rarely of such an extent as to give evidence on percussion. Frequently the friction sound is only heard for a few days, in other cases for many weeks. The importance of recognizing the presence of pericarditis in chronic uremia is in the fact that it gives clinical evidence that the tissues are saturated with the waste products of metabolism. Because of this the presence of a pericarditis gives us a clue as to the nearness of the fatal outcome. Cases of chronic uremia seldom survive longer than three months after the appearance of the pericardial friction sound. More often the fatal outcome is much sooner.

IN MYOCARDIAL INFARCTION

The diagnostic importance of a pericardial friction sound following thrombosis of a branch of the coronary arteries has been definitely recognized since Sternberg's publication in 1914 (27). Thrombosis of a branch of the coronary arteries, if not immediately fatal, is followed by an infarct of the heart muscle. When the infarct is sufficiently extensive to reach the surface of the heart a pericarditis occurs over the infarcted area with the deposit of fibrin, sometimes with an increase in the amount of the pericardial fluid which may at times be bloody.

The clinical picture is characteristic. The thrombosis is immediately followed by a sudden excruciating pain in the sternal region or in the epigastrium, radiating into the neck, the left shoulder, the arm and forearm, or both forearms. The pain has all the variations and radiations of angina pectoris, but at times is strictly localized. It is continuous for hours and even days. It is accompanied by marked dyspnea

and orthopnea, and in this it differs characteristically from an ordinary attack of angina pectoric in which the patient usually holds his breath for fear of increasing the pain. The dyspnea is due to the sudden myocardial insufficiency and to the pulmonary edema. The face has an anxious expression and has a pale ashy gray pallor. The pulse is rapid, frequently irregular, soft and thready. The systolic blood pressure falls but the diastolic remains as before the attack, and the pulse pressure may be only 15 to 20 mm. of mercury.

When the area of cardiac softening is at the anterior part of the heart a pericardial friction sound becomes audible within twelve to twenty-four hours. It is often of short duration lasting a few days only; in other cases it lasts for weeks. The myocardial infarction is followed by a low grade fever and a polymorphonuclear leucocytosis. The electrocardiographic changes characteristic of this condition have been studied by Herrick, Smith, Pardee, Oppenheimer and Rothschild, and others. Especially characteristic of coronary artery closure seems to be a change in the R and T waves, and "the katacrotic limb of R may become practically continuous with the peak of T, thus forming an almost monphasic curve" (Oppenheimer and Rothschild), (28). Other changes in the Q R S complex are usually found.

This is the picture of the clinically severe cases. Other cases occur, however, with very little pain and dyspnea, and in which the most characteristic manifestation is the localized pericardial friction sound. In the last sixteen months I have had occasion to observe four cases, three males and one female. All four cases were above fifty years of age, and gave a history of high blood pressure for many years with recent attacks of angina pectoris. These cases were admitted with moderate persistent pain in the lower sternal region following an attack of angina pectoris. Each of these cases presented a localized area of pericarditis which persisted for about one to four weeks. After the first few days the pain disappeared entirely, the systolic blood pressure, which was low on admission, rose, and only the pericardial friction sound remained. All four cases recovered completely. The finding of the pericardial friction sound is, therefore, especially valuable in those cases which do not present the severe clinical picture.

IN TUMOR OF THE PERICARDIUM

Tumor of the pericardium is a rare occurrence. Occasionally, however, a persistent pericardial effusion is observed clinically for which no cause can be found, and at autopsy a tumor mass is found in the pericardium. The effusion is usually hemorrhagic. I have had occasion to observe two such cases. In one case, that of a man of middle age with signs of pericardial effusion, death occurred suddenly. On autopsy the pericardium was distended with a hemorrhagic fluid and small papillary tumor masses were found in the upper part. The other case was that of a man of fifty years with metastatic carcinoma widely disseminated throughout both lungs. There was flatness on percussion over the left base and axilla, and I aspirated what I thought to be the left pleural cavity and removed 800 c. c. of a hemorrhagic fluid. Death occurred in about twenty-four hours. At the autopsy both pleural cavities were found to be completely obliterated and the metastatic nodules so densely packed as to leave hardly any sound lung tissue. The pericardial cavity was filled with a hemorrhagic fluid, but no tumor masses were found in the pericardium. I had evidently aspirated the pericardial cavity.

RARER FORMS OF ACUTE PERICARDITIS

The rare forms have been mentioned at the beginning of this discussion. They are usually dominated by the clinical picture of the original disease. Especially is pericarditis likely to occur in streptococcus septicemia. That streptococcus pericarditis is not always a fatal disease may be seen from the following case observed in the base hospital at Camp Greene during the period of the war. A young man of twenty-one years developed an acute streptococcus empyema of the right pleural cavity. This was drained. He then developed a localized collection of pus in the anterior part of the right chest, which was also drained. Soon after a pericardial friction sound was heard and this was followed by the signs of pericardial effusion. This was aspirated and 400 c. c. of a slightly hemorrhagic fluid removed which proved to contain a pure culture of streptococcus. The fluid reaccumulated in the pericardium and a similar quantity was again removed. The second fluid also contained streptococci. Although a slight amount of fluid reaccumulated it was not necessary to resort to aspiration, and the patient made a complete recovery from the pericarditis and the empyema.

A case of pericarditis which I had occasion to observe last year was that of a woman thirty-nine years of age who was admitted to the Gouverneur Hospital with follicular tonsillitis and a history of cough for three days. Her temperature on admission was 104.8, pulse 120, respiration 30. She presented a rash on her face in a butterfly arrangement, which was diagnosed by the dermatologists as erysipelas perstans faciei. The tonsillitis quickly improved, but seven days after admission she developed precordial pain and on examination a pericardial friction sound was heard. This friction sound persisted during her stay in the hospital of about six weeks. She ran an irregular febrile course with a moderate leucocytosis. Her lungs were negative on physical examination and by x ray. The urine was negative. She left the hospital against advice, while the fever and the pericardial friction sound were still present.

This case of pericarditis is difficult to classify. There was no evidence of rheumatic fever, of tuberculosis, of myocardial infarction, or uremia, and of pneumonia, nor was there any other recognizable cause for the pericarditis. It is quite possible that this case belongs to the group of valvular and mural endocarditis recently described by Libman and Sacks (29), in which pericarditis is of frequent occurrence.

SOME DIAGNOSTIC CONSIDERATIONS

At times the primary disease which is responsible for the presence of an acute pericarditis is not at all obvious. In such cases there are some considerations which may help us to determine what this primary disease is. In children and young people rheumatic affection of the heart is the chief causative factor. In persons past middle age coronary obstruction followed by myocardial infarction is the chief cause.

Where uremia is suspected, the blood chemistry will determine the correctness of the diagnosis. Primary tuberculosis of the pericardium is rare and so are tumors.

In some cases the determination of the character of the fluid exudate is of importance. This is the case in the pericarditis of pneumonia which is frequently purulent, that of septic infections, when the pericarditis has extended from a contiguous suppurative focus, and sometimes in tuberculous pericarditis. In such cases aspiration of the pericardium is indicated. It is hardly ever indicated in rheumatic pericarditis, and practically never in that of uremia and that of myocardial infarction. A hemorrhagic fluid which quickly reaccumulates after repeated aspirations is very suggestive of the presence of a tumor.

TREATMENT

The great clinicians of the first half of the nineteenth century all had a strong belief in the efficacy, in acute pericarditis, of mercury which they gave in large doses, and of venesection and the application of leeches. Happily modern medicine has gotten away from these forms of treatment. For this we are especially indebted to Skoda who demonstrated their uselessness.

In all forms of pericarditis with the exception of the purulent, the tendency for the inflammation is to subside and for the exudate to be absorbed. Treatment should be directed, therefore, first to the primary disease; secondly, towards lessening the work of the heart by rest; and thirdly, toward alleviating any annoying symptom.

The treatment of the various primary diseases needs no discussion here. In acute rheumatic fever, the administration of the salicylates should be continued, although this has probably no effect on the pericarditis.

Rest in bed is of course a fundamental rule. This should be complete. The patient should move as little as possible and should not leave the bed for urination or defecation. The half sitting posture is usually preferred by the patient. The diet should be restricted, semisolid, or liquid when the temperature is high.

Pain is frequently relieved by the application of an ice bag over the region of the heart for short periods of time. The ice bag should not be too heavy. When this is not sufficient codeine in doses of half to one grain, and when necessary morphine, preferably in small doses (one eighth grain), should be used. Of great value is theobromine because of its action as a vasodilator of the coronary vessels, and as a diuretic. In the form of theobromine sodium salicylate (diuretin) it is best given in five or ten grain doses three times a day.

The patient should be made as comfortable as possible in every detail. He should have a free movement of the bowels daily.

In rheumatic pericarditis the patient must be watched continuously for any signs of acute cardiac failure. This is a rather frequent occurrence. When it occurs, the patient should be promptly digitalized.

ASPIRATION OF THE PERICARDIUM

The question frequently arises whether the pericardial fluid should be removed by aspiration. In the pericarditis of myocardial infarction or of uremia, this is practically never necessary. In rheumatic pericarditis, this is seldom necessary. Coombs says that he had never seen a case of rheumatic pericarditis where the removal of the fluid was necessary. This holds for the greater number of cases, but occasionally the evident presence of a large effusion with marked dyspnea and other symptoms calls for aspiration. I remember a case, that of a girl of eleven years, with a large pericardial effusion and marked dyspnea, in which after consultation, aspiration was postponed for a few days. The patient died suddenly the next afternoon.

Aspiration when properly performed is not a dangerous procedure. The chief danger is injury to the heart and the superficial cardiac vessels. The classical point of entrance, according to Sauerbruch (30) (p. 273), is the angle formed by the seventh costal cartilage with the base of the xiphoid cartilage. Another point for aspiration is in the fifth left interspace two to three cm. from the sternal border to avoid the mammary artery. Palfry (31) advises the fifth interspace internal to the left border of the pericardial dullness. The patient should be in half sitting or preferably in erect posture. The skin is anesthetized with novocaine (one half per cent.), and either an aspirating needle or fine trocar should be used. When the fluid is reached a change in resistance can be felt. The fluid then empties itself or a Potain aspirator is used. Improvement is immediate. Although ordinarily not a dangerous procedure, rare cases of sudden death have occurred, according to Sauerbruch, following puncture in the fourth or fifth space.

The treatment of purulent pericarditis is surgical. Klose and Strauss (32) have collected eighty cases of purulent pericarditis which were treated either with aspiration or with intercostal incision or by rib resection and free drainage. The results are as follows: of twenty-nine cases treated by aspiration four lived, or 10.4 per cent.; of twenty-seven cases treated with intercostal incision ten lived, or thirty-seven per cent.; of thirty-seven cases treated by rib resection and free drainage twenty-one lived, or 56.7 per cent.

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A complete list of references will appear in the reprints.

Gynecological Operation in Insanity

ELLICE McDONALD, M.D.

Philadelphia

(*Concluded from page 27*)

This point of view in regard to psychoses is interesting in that it is more radical than the more conservative attitude of Broun and Taussig. It may, in part, be explained by the more recent onset of the psychosis in Bossi's cases as the results of operation will be better in the early stages of a psychosis. The claims of Bossi cannot be lightly dismissed as he is too good a gynecologist not to have his opinion carefully weighed.

Operation in the mentally disturbed may be divided into three classes: first, operation which is indicated for surgical lesions which threaten life; second, operation for lesions which produce upset metabolism for which the gynecologist would operate if the woman were sane, and third, operation for minor lesions, such as retroversion of the uterus, perineal lacerations, etc. In the first class of lesions threatening life, there can be no dispute as to the necessity of operation, and in the second class of lesions producing upset metabolism there can be but little argument that, if the danger of the operation is not great, these lesions (of which uterine myoma would be an example) had better be corrected.

The third class of lesions (of which retroversion of the uterus, painful menstruation and hernia are examples) occupy a more debatable ground. These are the cases upon which Bossi operates as a routine and reports mental recoveries after surgical measures. He is not alone in this belief as Schockaert (19) has reported a number of mental cures following correction of retroflexion of the uterus or other minor anomalies. He concludes that gynecological affections often insignificant in appearance, may, in some cases, be responsible for distressing psychopathies which may in turn be cured by a removal of the cause.

The proper course in these cases was very puzzling until the study of the vegetative nerve balance by Ludlum and myself (20) threw some light upon the mechanism. Pelvic troubles, such as pelvic infection or menstrual disturbances, will sometimes produce a local action upon the pelvic nerve, or pelvic branch of the vagus, so that this effect is visible in the smooth muscle reaction of the large intestine. The pelvic nerve (pelvic vagus, formerly called the N Erigens) supplies the pelvic viscera and the large intestine from Cannon's ring (about two fingers' breadth from the hepatic flexure) to the rectum. In certain cases it is possible to see vagus preponderance in the course of this nerve out of proportion to the rest of the vegetative nerve balance. In these cases it is usually possible to find some pelvic lesions, such as infection of retroversion, which will produce abnormal irritation of stimuli acting upon the central nervous system by intermediation of the vegetative nervous system to upset the functional balance. These cases have been approached very conservatively, but there is no doubt that selected cases can be much benefited and cured by properly chosen surgical measures. An example of such a case was one of toxemia of pregnancy where curettage cured the psychosis.

These cases, however, must be chosen each upon its own merits, and we have not been able to lay down any hard and fast rules for operation upon psychotic patients in these minor ailments. If all the cases of psychosis with retroversion were operated upon, more harm than good would result, but, in selected cases, benefit will accrue. In my own opinion, the amount of pelvic nerve disturbance weighs heavily for operation, because when this additional vegetative nerve upset is removed, the patient has an opportunity to recover, and in our experience it cannot be too emphatically stated that mental recovery is associated with recovery of the vagus sympathetic balance of the vegetative nervous system.

In the third class of minor gynecological ailments, operation is only done in selected cases after careful examination of the vagus sympathetic balance, consideration of the amount of pelvic nerve action and the relation of the lesion to vegetative nerve irritation. In certain lesions my opinion as to surgical operation is definite. Hernia is one of these lesions and my mature opinion (whatever it may be worth) is that all hernias should be cured by surgical measures in the mentally disturbed, unless there is some definite reason to the contrary, as age, coincident disease or prolonged psychosis. Hernia is in itself an expression of lack of vegetative nerve tone and plastic tonus as may be seen from the frequency of hernia in an old operation scar of the pregnant and is an expression of lack of calcium (which promotes protoplasmic rigidity of structure) and of vagus tone, so that hernia is more frequent in the sympathetic preponderants.

Operation in the psychotics is, then, done only after careful consideration and each case studied in all its own phases. Infection has not been found in anything like the percentage described by some observers.

Cotton (21) from the State Hospital at Trenton, New Jersey, states that it was necessary to remove the tonsils in ninety per cent. of all his patients who entered the State Hospital. He states that eighty-three per cent. of the male patients and seventy-six per cent. of the female patients were considered to have gastric infection and that twenty per cent. of the functional group had serious lesions of the colon. He found the cervix infected in eighty per cent. of the women. The seminal vesicles were found to be infected in fifty per cent. of the chronically insane men. Total colectomy was done in 133 cases with forty-four deaths (thirty per cent. mortality) and partial colectomy in 148 cases with fifty-nine deaths (forty-two per cent. mortality).

In the psychotic women examined by me at the Philadelphia General Hospital and elsewhere, no such percentage of infections as this has been found. At the time of the inception of this study, it was my belief, influenced by Cotton's reports, that a large

percentage of infection would be found. Such has not been the case. In my examinations of the patients in the psychopathic wards of the Philadelphia General Hospital and private hospitals, it has not been thought advisable to remove the colon in any case yet examined. Cotton's indications, as given in his paper, are 1, history of intestinal disturbance; 2, pain and tenderness in the right lower quadrant, and a certain amount of muscular rigidity, and 3, marked delay in the passage of the barium meal and over forty-eight hours.

These indications mean that the patient had an increased smooth muscle reaction, spastic colon and vagus preponderance. All the symptoms upon which Cotton bases his indications for colectomy may be readily explained by increased vagus action and preponderance. The history of intestinal disturbance is suggestive; the tenderness is almost constantly present upon both sides and in the hypogastric region. Tenderness upon pressure in the angle of the ribs and a little to the right is quite constantly present in vagus preponderance and, with a spastic colon, tenderness over the course of the colon, particularly at the head of the cecum, hepatic flexure and sigmoid is quite usual. Rigidity of the abdominal muscles is not common, although there is quite frequently resistance. The retention of the barium meal in the colon over forty-eight hours is a very common condition in sympathetic preponderance and even in spasticity. The meal often advances at a rapid speed to the colon which clamps down in spasticity and holds the barium meal for forty-eight hours or longer.

In other words, in my opinion, the cases as described by Cotton, for which he excises the colon, are cases of vegetative nerve upset. The radiographs which he gives in his article bear out this opinion and show typical vagus preponderance. No doubt there are cases in which there is infection as a source of disturbance of the vegetative nervous system and as a cause of mental psychosis, and, no doubt, there are also cases in which the colon is directly infected, but these cases are not common and not present in the proportion stated by Cotton. In my opinion it is extremely rarely necessary to remove part of the colon, and then only in cases with distinct and known pathological lesions such as tumors, obstructions, etc. Three reasons influence to this opinion, 1, the operation has a large mortality; 2, the indications must be definite and not vague, and 3, the operation does no good. In some cases, after colectomy, the lower part of the small intestine enlarges to take the place of the colon. In addition, the opinion of surgeons, who have had experience with colectomy after Lane's advocacy of the operation for intestinal stasis, is very decidedly against the operation as a therapeutic measure, except for known and definite pathological abnormality. In this opinion we concur.

Infected cervix uteri have been found by Ward Crampton (23), working with Cotton, in a very large percentage of cases (eighty per cent.). He believes that this infected cervix produces a similar intoxication to an infected tonsil and that removal will produce beneficial results to the psychosis. In this study at the Philadelphia General Hospital, infected cervices have been found in a very small percentage of cases, not one tenth of the percentage reported by Crampton and no gynecologist will believe that an infected cervix will produce symptoms commensurate with infected tonsils. So this operation, as a surgical procedure alone, has not been done.

Infection in psychoses and in bodily disease generally is often a terminal result rather than a cause, as cases of vagus preponderance seem to be prone to certain infections with the pyogenic organisms, just as the sympathetic preponderant are prone to pneumonia. Removal of an infection will often break the vicious circle and allow the vegetative nerve balance to recover. Infection will, of itself, sometimes produce a psychosis, but its place in causation is by no means that given by Cotton and his collaborators, and surgical procedures of the type he advises have not been practised by us.

An interesting fact in the study of surgical lesions in the insane is the little complaint they make of pain. Lesions which produce great pain are borne uncomplainingly and often discovered accidentally. Such a case was one of extreme hypertrophic cystitis, the most extreme ever seen by me. This woman died three days after her admittance to the Philadelphia General Hospital and the autopsy showed an ascending kidney infection and a marked hypertrophic cystitis with the bladder wall thickened to three c.m. No more painful gynecological lesion can be imagined and yet this woman made no complaint of pain. This faculty of bearing pain seems general among the insane women and is another reason for immediate gynecological examination of all women on admittance to the psychotic wards as attention is not directed to the gynecological lesion because no complaint is made.

Another interesting fact is the infrequency of cancer in the mental hospitals. In the British Isles (23), the incidence of cancer deaths in the insane hospitals is three per cent., while in the average population the cancer deaths are 12.4 per cent. No doubt cancer is quite uncommon in psychotic women for whatever reason.

Gynecological examination is not usually difficult in the mentally disturbed and, in my experience, an anesthetic is rarely, if ever, necessary. If difficulty is encountered, a morphine and atropine suppository usually produces enough narcosis, so that examination can be done in the stage of numb drowsiness. Before any patient is subjected to operation the consent of the relatives or friends is necessary: in the absence of friends, in the instance of state charges, the consent of the superintendent of the hospital must be obtained.

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A Case of Rat Bite Fever in New Jersey

M. DE FRONZO, M.D.
Newark, N. J.

This case is being reported because rat bite fever is quite rare in the United States—particularly in the Eastern States. It is typical in every respect of rat bite fever as described by Osler, Castellano, *et al.* The specificity of the arsphenamines is also well demonstrated.

HISTORY

About August 1, 1923, the patient, a girl of two years, while asleep in a crib, was bitten on the left hand by a rat, which was scared away by the mother, who rushed to determine the cause of the patient's

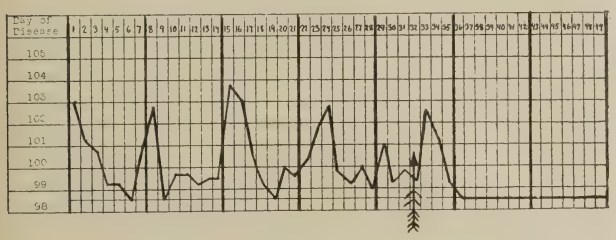

Fig. 1.—Temperature chart showing the rise in temperature to 103-104° about every seventh day.

crying. She found the baby's left hand bleeding quite profusely. Their physician was summoned and he cauterized the wound with phenol and applied a wet dressing. The child apparently showed no immediate ill effects.

Three weeks later, the mother noticed that the child became irritable, would not take its food well, and would not play with its parents as it formerly had done with enthusiasm. The child then became feverish, and its left hand became puffy. The family physician was summoned and he advised that the child be sent to the Newark City Hospital.

The child was then admitted to the surgical service of Dr. Randall with the following complaints: fever, puffiness of left hand, with swollen glands in axilla of same side, extreme irritability, scattered macular rash over body.

Physical examination revealed a well developed and nourished white girl of two years, with flushed cheeks, crying lustily and appearing acutely ill. Head, neck and chest were negative on examination. The abdomen revealed a spleen which was easily palpable at the costal margin. There was no pain or rigidity anywhere.

Glandular system showed cervical, axillary, and inguinal nodes all easily palpable. Those of the left axilla were enlarged to almost the size of a hen's egg. They were hot, red and tender to touch. No fluctuation.

The skin revealed a scattered maculopapular rash of reddish brown hue about two to five mm. in diameter, distributed over both shoulders posteriorly, chest, abdomen, both thighs, and dorsum of left foot.

On the dorsum of the left hand, there were three healed scars of a bite, with a bluish red discoloration about the size of a dime around the scars. The hand was swollen and puffy in appearance. There was no evidence of fluctuation anywhere. Red streaks ran up to the left axilla, where the nodes were visibly enlarged to the size of a hen's egg and quite tender to the touch. Epitrochlears were not felt.

A diagnosis of rat bite fever was made by me and the hand was put on saline wet dressings. All arsphenamines were withheld so that I could observe the clinical course of the disease.

Laboratory data revealed a blood count of total leucocytes 15,200; polymorphonuclears, 85 per cent.; lymphocytes, 13 per cent.; eosinophiles, two per cent.; hemoglobin (Dare), 85 per cent.; red blood cells, 4,-200,000. The urine was negative. Blood cultures were negative on two different occasions. About two c.c. of the patient's blood was injected into the peritoneal cavity of a white mouse. This mouse became quite ill. It bit another mouse a few days after inoculation and this second mouse also became ill. About a week later, both were autopsied but no spirochetes were discovered.

The temperature chart revealed the interesting fact that about every seventh day the child's temperature would rise to 103-104° F. Irritability would increase, the hand would become puffy and indurated; the lymphangitis and lymphadenitis markedly pronounced and the macular papular rash would stand out prominently. The temperature would fall by crisis and then all symptoms and signs would subside until the next paroxysm, when they would become pronounced again.

At the end of the fifth week, just before a fresh paroxysm was expected, I gave the child .2 gm. of neosalvarsan, dissolved in two c.c. of sterile normal saline, into the muscles of left buttock. The child's temperature rose from 98° to 102.6°—and then came down by crisis. Following this injection, the puffiness, lymphangitis, lymphadenitis and

maculopapular rash all disappeared. On the following day, the mother noticed and remarked that the the child appeared to be like her usual self, ate her food readily, played with anybody, did not cry and became more tranquil.

The child was kept in the hospital for sixteen days more after receiving the neosalvarsan with no recurrence of any of her symptoms. She was then discharged October 1, 1923, as cured.

She was seen again in the latter part of January, 1924, free from all signs and symptoms—the father remarking "the child never looked any better and was putting on weight rapidly."

196 Fairmount Ave.

Puerperal Infection: A Study of an Etiological Factor

DANIEL H. BESSESEN, M.D.
Minneapolis, Minn.

(*Concluded from page* 33)

Case VII.—A primipara, aged twenty-six, who has had measles, mumps, with no evidence of disease in the family, marital, social, occupational, or menstrual histories. On physical examination there was found varicosities of the left leg, and pregnancy. Prepared with ten per cent. mercurochrome and glycerine mercurochrome iodine solution, three hours and thirty minutes before final completion of labor. Delivered spontaneously, with first degree laceration of the perineum. Puerperium normal.

Case VIII.—Para five, aged thirty-two, had had measles, mumps, varicella, pertussis, variola, appendicitis, with rupture and abortion at five months, and two induced abortions at two months. On physical examination there was demonstrated a pregnant woman, with syphilis. Because of an occiput posterior position, a version was performed. Preparation with ten per cent. mercurochrome and glycerine mercurochrome iodine solution, seven hours before final termination of labor. Ten injections of arsphenamine and mercury salicylate given during the last trimester, apparently successfully relieved the luetic condition temporarily. The puerperium was entirely normal.

Case IX.—Primipara, aged twenty-one, with no history of illness of any sort in the family, marital, social, occupational, or menstrual histories. Physical examination was absolutely negative. Prepared with ten per cent. mercurochrome and glycerine mercurochrome iodine solution nine hours before final termination of labor. Delivered by medium forceps from an occiput posterior position with the cord three times around the neck of a dead female strangulated child. The delivery did not occur until the placenta was pulled away from the uterus by the extraction. Puerperium normal.

Case X.—A secundipara aged twenty-three who has had varicella and influenza, with no evidence of disease in the family, social, occupational or menstrual histories. On examination there was no evidence of disease. Prepared with ten per cent. mercurochrome and glycerine mercurochrome iodine solution five and a half hours before final termination of labor. Patient delivered spontaneously. Puerperium normal.

Case XII.—Patient was a para eight, aged twenty-six, living in poor surroundings, who has had a still born child at eight months and two miscarriages at two and four months, with no evidence of disease in the family, marital, social, occupational or menstrual histories. On physical examination there was found a small, anemic, undernourished woman of old appearance who was bleeding heavily from the vagina. Preparation with ten per cent. mercurochrome and glycerine mercurochrome iodine solution, which was also soaked on a tampon packed into the vagina. Delivered, placenta prævia, on an ambulance three hours later with a blood loss of one litre; 350 c. c. of citrated blood with 200 c. c. normal saline were transfused. Puerperium normal.

Case XII.—A para four who had had measles, mumps, typhoid, scarlatina, tonsillectomy, and a family history of tuberculosis in the mother, with an abortion at two months and no evidence of disease in the marital, social, occupational or menstrual histories. On physical examination there was observed a simple cyst of the thyroid, a lymphadenitis of the right axilla, mitral insufficiency and pregnancy. Prepared with ten per cent. mercurochrome and glycerine mercurochrome iodine solution one week preceding delivery. Only the perineal preparation was repeated at the time of delivery. Child delivered spontaneously with second degree posterior laceration of the perineum. Puerperium normal.

Case XIII.—Secundipara, aged twenty-six, who had had measles, whose husband is treating for syphilis without familial, occupational, social or menstrual evidence of disease. On physical examination there was found pyorrhea alveolaris with pregnancy. Patient was delivered spontaneously with Crede expression of the placenta, second degree laceration of the perineum. Prepared with ten per cent. mercurochrome and glycerine mercurochrome iodine solution eight hours before delivery. Puerperium normal.

Case XIV.—Para six, aged thirty-two, who had had scarlatina, measles, varicella, mumps, pertussis and pneumonia and varicose veins, with no evidence of disease in the family, marital, occupational, social or menstrual histories. On examination there was found an old laceration of the cervix uteri, old laceration of the perineum, erosion of the cervix, with cystocele and rectocele. Delivery precipitated from a left shoulder presentation with external manipulation. First degree laceration. Preparation with ten per cent. mercurochrome and glycerine mercurochrome iodine solution nine hours and thirty minutes before final termination of labor. Puerperium normal.

Case XV.—Para seven, aged thirty-one, who had had measles and varicella, no evidence of disease in the family, marital, social, occupational or menstrual histories. Physical examination showed a left pyelonephritis, cystitis with tendency to hypertension, incomplete prolapse of the uterus and pregnancy. Patient was in bed during the last trimester. Mother delivered spontaneously. Preparation was mercurochrome ten per cent. and glycerine mercurochrome iodine solution fifty minutes before termination of labor. Puerperium normal.

CONCLUSIONS

Puerperal infections have been recognized and treated since the earliest history of medicine. If the British definition of puerperal infection is accepted, it is found in from six per cent. to 22.9 per cent. of all deliveries with a mortality of 0.1 per cent. to .5 per cent. of morbid cases, and one out of four hundred of all deliveries. The etiological factors come from contaminated surroundings from contact, from operations and accidents of labor, from infections in other parts of the body, but the majority of cases arises from the bacteria present in the vagina. The mechanism of entrance of these bacteria into the uterus is the mechanism of labor, especially the second stage. Factors which facilitate this entrance are operative delivery, long labor, Crede expression of the placenta.

To prevent this, the vagina must be sterilized. The technic of vaginal sterilization is presented—paint the introitus, vulva, perineum with ten per cent. mercurochrome, inserting a speculum lubricated with glycerine mercurochrome iodine solution. This technic applied to sixteen cases shows excellent results.

SUMMARY

Historical factors and the data of present day occurrences of puerperal infections are presented here with the summary of the etiological factors—emphasis being placed upon the vaginal flora as the origin of a large percentage of infections during the puerperium: the methods of attempting sterilization of the vagina are reviewed and a technic for vaginal sterilization presented.

The author's references will appear in his reprints.

Brain Diseases*

JOHN WILLIAM SHUMAN, M.D., F.A.C.P.
Los Angeles

Here brain diseases is used in the broad sense,—diseases of the central nervous system. Internists should be able to recognize and differentiate the functional from the organic. To this end, your previous training in anatomy and physical diagnosis was given. Experience, however, will be your best teacher. Only the high spots can be touched upon at this clinic. Space forbids other than brevity.

After treating a patient for headache for a long time with much dope and little thought; or a case of vomiting as "stomach trouble"; or vertigo, disturbed vision, group muscular weakness, and a number of other things; and afterwards learn that a brain tumor was the cause of these symptoms which were treated as a disease,—you will then be learning medicine.

Remember the tripod headache, vomiting, and choked disc, support a diagnosis of brain tumor.

A chief fault we doctors have is faulty memory,—the inability to remember essential things about our case and cases. Few of us can, when it is necessary, reel off the twelve cranial nerves thinkingly and recognize disturbances in them and interpret the same. If one can do this much has been mastered towards the making of a neurologist. We must be able to test superficial and deep reflexes from pupils to plantar and know how to interpret them.

The fact that we are oftimes defeated in the proper recognition of a brain tumor, also in its character and location, is no reason why we should not tackle it.

Meningitis forms a large percentage of brain diseases and may be meningococcic, streptococcic, pneumococcic, or staphylococcic, syphilitic, tuberculous, or what not in origin. It may complicate empyema of mastoid, ethmoid, sphenoid cells or maxillary and frontal sinuses, or come from a boil on the upper lip, or from many other causes.

Meningismus or cerebral irritation is not to be confused with meningitis. Not long ago a doctor when asked, "How could you make a diagnosis of epidemic cerebrospinal meningitis?" answered, "By spinal puncture!" Much was wrong with his training. He, you see, skipped history and physical findings entirely,—highly essential things before diagnostic trauma of the spinal canal should be considered.

The sudden onset of agonizing headache, projectile vomiting, fever, tachycardia, cervical rigidity, a positive Kernig and Brudzinski with a leukocytosis and an increase of polys makes the diagnosis of acute suppurative meningitis more than a mere guess. Spinal puncture may then be demanded on three counts:

First—For drainage (therapeutic),
Second—For examination, and
Third—For introduction of antimeningococci, serum if due to meningococci which are extracellular and intracellular, and gram positive.

Tuberculous meningitis is more slow in onset. Characteristic as to temperature curve, has a lymphocytosis, and a focus of infection elsewhere, such as in the lungs, peritoneum, or other locations. Remember the conelike percipitate which settles out in the spinal fluid and in which the acid fast organisms can be found.

*First of six clinics held for the Seniors of Coll. of Med. Evang., Los Angeles at the L. A. G. H., March 18, 1926

Remember also that typhoid fever, tuberculosis, measles, malaria and influenza are diseases in which a leucocytosis does not occur. Lymphocytosis does occur in measles and tuberculosis. A leucopenia usually occurs with typhoid and influenza.

Never forget that syphilis is an exceedingly common cause for brain disease and can be of the coverings or deeper structures and simulate poliomyelitis and epidemic encephalitis or polioencephalitis. History and physical findings are important. Look for a scar of a previous sore on the penis, vagina or lip, an adenitis, disturbed reflexes, gait and station and as a check up, but less important, a four plus Wassermann.

In history taking leading questions are not good. For example,—"When did you have a sore on the penis?" is much better than, "Did you ever have syphilis?" The latter will invariably draw a "no." Do not be easily led or one will be too often misled—by a scar on the penis. When finally arrived at a diagnosis, try to disprove it. If it withstands such an attack it is more likely to be correct.

Do not be afraid of consultations with other internists, neurologists, ophthalmologists, röntgenologists and surgeons in reference to brain diseases. They have taught me much. The laity will like it and it will often help your patient,—The one you are after all most interested in.

Leave hysteria out of your diagnostic vocabulary, also neurasthenia. These are symptoms and not yet understood properly enough to be interpreted like fever, vomiting, rheumatism, anemia and a lot of other disease symptoms which were once treated by our forefathers in medicine as diseases per se,—and I regret to state by some physicians today.

Read up on whatever case you have under question. One case well studied is worth ten just snapped at.

If you put all brain diseases on the organic basis and work them out accordingly you'll not be as far wrong as to assume they are, "Functional until proven otherwise." It is now known that encephalitis not only causes "shaking palsy" (loss of coordinate function), but other things which heretofore we diagnosed functional diseases.

In reference to functional diseases, let us remember a few things, "diagnostic pegs" I call them. First that the hall mark of paranoia is suspicion. That in dementia precox "the individual is stranded on the rock of puberty." That illusions, delusions and hallucinations figure strongly in these two diseases, also in confusional insanity, that a slurring speech speaks for disseminated sclerosis. The acute manias or madness of high fever, alcohol and other intoxication and coma from many causes, e. g., so-called sandbag, diabetes and uremia, are not difficult as a rule to differentiate unless the sandbagged individual was morphinized and alcoholized at the same time and was a diabetic.

The sense of smell will recognize the alcohol on the breath or the fruity odor of the diabetic (acetone). With morphine the pupils are contracted unless blindness, a glass eye, adhesions about the iris, a cataract or something else interferes. A urinalysis will find sugar if present, also albumen and casts.

Apoplexy of the cerebral type usually accompanies arteriosclerosis. Hypertension and enlarged left heart usually occur in a person over forty years of age.

It is almost axiomatic that the man who makes a diagnosis in cases where other men fail, does not do so because of superior intelligence. All may be equally well trained but the one man observes every detail of his examination systematically and thoroughly and has a definite method of approach to his problems, whether it be neurological, obstetrical or surgical.

The man who is alert and will quickly note a unilateral exophthalmos, a positive Rhomberg, a difference in knee jerks, will often make the diagnosis the other man has missed.

An illustrative case[1] then shown by Dr. Legget. A "brain tumor suspect." The diagnosis based upon history of two year periodic attacks of headache, vomiting, and epileptiform seizures. The latter often followed by hours or days of unconsciousness. Weakness and twitchings in the left side of face, hand and leg. After more observation and study a decompression operation by his surgeon will be done.

[1]M. Cousins, through the kindness of Dr. Carl Rand, Brain Surgical Service, Los Angeles General Hospital.

Treatment of Gonorrheal Arthritis by Vasotomy with Special Reference to the Study of Vesiculograms

GEZA GREENBERG, M.D.
New York

Following the teaching and pioneer work of Belfield in the treatment of gonorrheal arthritis, I have in the last five years undertaken the study of this disease by injecting the vesicles either through the open operation as advocated by Belfield, or through the ejaculatory ducts by way of the urethra by means of a special cystoscope devised by me.

In the course of my investigations I have studied the seminal vesicles röntgenologically immediately after the operation to determine the size, configuration, amount of distension and relative position of them; and, in addition to that, I have taken serial radiographs on consecutive days to ascertain the length of time necessary for the vesicles to thoroughly empty themselves.

The position of the vesicles in the average case is midway between the horizontal and vertical planes of the body. This, however, is not constant, it varies not only in different individuals, but very often the two vesicles in the same individual vary as to size

and position. The more nearly they approach the vertical plane, the better the drainage and, hence, the shorter the period of convalescence, and, conversely.

Furthermore, the condition of the prostate through whose substance the ejaculatory ducts pass to their destination on the surface of the veru montana determines the character of drainage from them. Thus a chronically enlarged and inflamed prostate prolongs indefinitely an infection of the vesicles, and establishes a vicious circle.

Contractions of the bladder, levator ani muscles and possibly the perineal muscles at the end of micturition aid vesicular drainage to a great extent. The more horizontally the vesicles are placed, the easier it is to reach them, for then they are usually distended, whereas, in a vertical position, they, usually being empty on account of better drainage, are farther removed from the examining finger.

That absorption takes place largely through the seminal vesicles has been amply demonstrated by Eugene Fuller, who obtained excellent results in gonorrheal arthritis by draining them. This operation has not been popular with the profession on account of apparently technical difficulties.

That absorption proceeds from the vesicles can be accounted for by the anatomical considerations. The vesicles are fibromuscular tubes about six inches long when unraveled. In the true anatomical state as we find them, being coiled on themselves, and about two inches in length, they present a rather large absorbing surface; and, in view of the lymphatic supply, which forms three distinct networks, one in the mucosa, one in the muscularis and one in the outer coat, one can readily see the ease with which infection can spread to the general circulation. The prostate, too, contributes its share to systemic infection.

In order to treat gonorrheal arthritis successfully, it is requisite that it can be recognized and combated early before secondary changes take place in the joints. It is by no means a monoarticular disease as has been taught; on the contrary this is rather the exception. Usually a number of large and small joints are involved. There is a tendency for an infection of the tendon sheaths, as well as for exostoses of bones, notably that of the os calcis to develop.

When the arthritis is acute it must be differentiated from acute rheumatic fever. One important differential point is that, in rheumatic fever which is distinctly migratory in type, the disease travels so rapidly as to involve almost all the joints in a comparatively short time; but in so doing, the joints which were at first attached may be entirely free from any signs of inflammation, whereas in gonorrheal arthritis the infection rarely extends quite so rapidly, but if it does it is unusual for it to subside entirely in the joints first involved. The fever is higher in rheumatism and associated with a good deal of sweating and prostration, whereas in gonorrheal arthritis the fever and pain are less marked, and sweating is not conspicuous unless associated with purulent joints, or secondary to antipyretics used. The antecedent history of previous relapsing attacks of tonsillitis, arthritis, cardiac or nervous manifestations, in the absence of sexual exposure, past or present gonococcal infection, favors the diagnosis of rheumatic fever. On the other hand, a history of sexual exposure, of acute or subacute urethritis in the presence of gonococci in the urethral or adnexal smear, or a history of repeated attacks of urethritis, even in the absence of the specific organisms, should awaken a suspicion of a possible gonorrheal arthritis. Occasionally the two diseases may be associated together, and then it requires a good deal of diagnostic acumen and circumspection to determine which of the two is predominating.

Syphilis in its chronic stage quite often attacking joints, must be differentiated from gonorrheal and rheumatic arthritis by its insidious onset, by its less acute state, and hence causing less pain and tenderness; furthermore, the history, the Wassermann and therapeutic tests should clear up the diagnosis.

Tuberculous synovitis must always be considered when only one or two joints are involved. However, the age, history, general condition and x ray findings should settle the diagnosis.

Arthritis deformans must also be differentiated from gonorrheal arthritis by its very insidious onset —often taking years for its full development—its symptoms at first being vague, represented by stiffness, creaking and pain, while the bony changes set in later.

On the other hand one must not lose sight of the possibility of septic absorption from the genital and urinary tracts even in the absence of an active gonococcal infection giving rise to joint involvement, the infection being caused by other pyogenic organisms, not unlike the absorption proceeding from the nasal sinuses, tonsils and teeth.

The urethra must be carefully examined for strictures, which often are a source of infection. The prostate and the seminal vesicles must be the object of a thorough and painstaking examination. The prostate may feel normal to the touch, and yet be the seat of a follicular infection, which can be determined only by a microscopic examination of the expressed secretion, and by a cystourethroscopic examination, when pus may be seen gushing forth from the prostatic follicles.

In the course of a cystoscopic examination one may glean considerable information about the state of the seminal vesicles, particularly when they are indurated and surrounded by a perivesicular infiltration, causing a marked protuberance in the region of the ureters with the formation of decidedly prominent ridges issuing from them to the internal sphincter. At times the infiltrate around the base of the bladder may be so extensive and dense as to raise the entire trigone, and convey the impression of a beginning midlobe hypertrophy of the prostate, or a hypertrophied trigone. The proximity of the vesicles to the trigone with their accompanying pathological condition is sufficient to account for the frequency of urination associated with seminal vesiculitis. The possibility, in intractable cases of vesiculitis, for the infiltrate to extend underneath the subtrigonal tissues as far as the internal sphincter, and possibly the prostatic urethra, with secondary contraction of the sphincter, is by no means precluded. Then, again, the induration may be sufficiently extensive to travel upward in the direction of the ureters, encroaching upon their lumen and causing the formation of hydroureter and hydronephrosis. The latter has been proved clinically.

During a cystourethroscopic examination one may for radiographic purposes inject the ejaculatory ducts,

preferably with a solution of thorium, sodium iodide, or sodium bromide instead of the opaque silver collodial preparations, which blur the field of vision. When the vesicles have been sufficiently distended with any of these media, they become more readily accessible to the examining finger in the rectum. On numerous occasions since 1917 the ejaculatory ducts have been catheterized and medicated by me through a special direct vision cystourethroscope, which I have designed for that purpose.

In order that the seminal vesicles stand out prominently in vesiculograms, it is necessary that they be thoroughly stripped of their secretions and the bowels freed of their contents prior to the injection.

The following points must be studied from the vesiculogram: 1, their shape or configuration; 2, their size and degree of distension; 3, their relative position to each other and to the different planes of the body; 4, the number of convolutions and possible distortions which may subsequently interfere with perfect drainage from them, and lastly as to the length of the time necessary for the vesicles to thoroughly drain their contents without any outside interference. The latter can be determined by taking radiograms on consecutive days until the opaque medium can no longer be perceived. Since drainage is such an important factor in seminal vesiculitis, and as its character can be so easily studied from the vesiculograms, one can appreciate the extreme necessity of this additional information both for prognosis and treatment. In the course of my investigations I have learned that, if the vesicles are favorably situated for drainage, and that is if they approach nearer the vertical than the horizontal plane of the body, there is no residuum found in them from twenty-four to forty-eight hours after injection. Such cases clear up in a comparatively short time, and yield readily to the simple vasotomy operation and retrograde injection of the vesicles, or to intraurethral injections by way of the ejaculatory ducts. If, on the other hand, the vesicles retain the opaque solution at the end of forty-eight hours, the probability is that they will continue it for a long time, and unless relieved surgically, will indefinitely feed the system with toxins. In some cases the drainage is so poor that days or possibly weeks after the injection the radiogram shows a very marked distension of the vesicles. The contour of the vesicles will vary according to the etiological factor. If the upper part of the vesicles reveals a dilated sac and the lower extremity signs of imperfect drainage, it, in all likelihood, is indicative of swelling of the upper convolutions of the vesicles; whereas, if all portions of the vesicles are dilated, the point of obstruction must be looked for either in the excretory duct of the vesicles, or in the ejaculatory ducts. They, the ejaculatory ducts, in turn, may be the primary seat of inflammation, by extension from the urethra, or compressed from without by the inflammatory exudate of the prostate.

From all this it is evident that the treatment will depend on the underlying pathological condition. The majority of cases respond readily to the Belfield operation. In order to facilitate the accessibility of the vas for subsequent injections, I have, in some minor details, modified the classical Belfield operation.

The upper part of the scrotum just below its junction with the root of the penis is selected as the site of operation. The scrotum and penis are thoroughly painted with a solution of three per cent. picric acid in alcohol; then the scrotum in its upper angle with the contents of the cord is grasped by the left hand, and injected with one per cent. novocaine solution through the skin, exposing the cord and all its layers of fascia; each layer is dissected separately and held between clamps until the vas and the rest of the contents are brought into view. The vas with its bloodvessels is sharply dissected away from the cord and by means of tape held up, while the other structures are dropped back into the wound. The fascia are now brought together by several sutures to form a floor for the vas. The vas is then stripped of some of its fascial covering for a distance of about one and a half inches, avoiding the artery of the vas, and incised in its longitudinal axis with the point of a tenotomy knife. The incision should be barely long enough for admitting a needle of 20 or 22 bore. I have used a special platinum needle of 20 provided with two rings, made for me by the Kny-Scheerer Corporation. The needle, while resting in the vas, is fastened to the skin by means of a suture passing through the rings. In order to secure additional immobility of the needle within the vas while manipulated in the course of the injections, I have used a rubber tubing four inches long and attached to an adapter of a Luer syringe connected with the hub of the needle. This attachment prevents jarring and possible dislodgement of the needle. The solution is then injected into the vas. In the majority of cases I have used from fifteen to twenty c. c. of twenty per cent. argyrol solution and followed it up with sufficient sterile water to wash out thoroughly the lumen of the vas. On the other hand I have in quite a number of cases used with equal satisfaction a one per cent. solution of silver nitrate. Great care must be exercised in preventing leakage into the tissues. If any solution has accidentally escaped into them it should be immediately washed out with salt solution. For additional security a small rubber drain is inserted which is removed at the end of twenty-four hours. The wound is now ready to be closed by one suture. The injection is carried on daily for three days through the needles which are left in the vas. At the end of three days they are removed.

While the vasotomy operation does not necessarily terminate the gonorrheal infection in all cases—although it is indispensable in many complicated cases of gonorrhea in conjunction with the routine treatment—it does, nevertheless, clear up in a remarkably short space of time the most painful arthritic lesions in the great majority of patients.

OTHER TYPES

The cases that do not respond to the vasotomy operation, as indicated by the clinical course of the disease, or by the vesiculograms showing imperfect drainage, must eventually, after repeated failures from other methods of treatment, submit to more radical surgical measures such as vesiculotomy or vesiculectomy combined with prostatomy.

To sum up, the majority of gonococcal arthritis cases respond to the simple vasotomy operation and injection of the vesicles with silver solutions; if they do not, they must be submitted to major surgical measures provided they utterly fail to respond to the

usual methods of treatment. Injection of the vesicles unquestionably shortens the period of convalescence.

CONCLUSIONS

In conclusion, I should lay down the choice of treatment of gonorrheal arthritis in the following sequential order:

1. A vigorous routine antigonorrheal treatment including all known accepted measures.

2. Injection of the ejaculatory ducts through the urethra.

3. Vasotomy under local anesthesia; failing in this then.

4. Exposure of the prostate and vesicles by means of an open perineal dissection under perfect visual direction, draining or removing the vesicles as one sees fit, and draining the prostate at the same time.

120 East Thirty-fourth Street.

Abscess of the Parotid Gland Following Acute Membranous Tonsillitis

A. LOBELL, M.D.

New York

CASE

Mrs. A. R., aged forty-four, married. The important points in her past history are, that she was subject to tonsillitis and that she was suffering from a progressive type of catarrhal otitis media.

On March 27, 1923, general and local symptoms of an acute tonsillitis developed. The tonsils presented a nondiphtheritic membrane. A streptococcus was found to be the cause of the condition. She improved under the ordinary therapeutic measures.

On April 3rd, she complained of pain in the left ear. An examination showed nothing abnormal in the ear. One could elicit some tenderness in front of the tragus and at the angle of the jaw.

April 5th, the left parotid gland was swollen, resembling mumps. She had dryness of the mouth and painful deglutition. The constitutional reaction was severe. The temperature was 105° F. She was delirious at times and the prostration was marked.

April 8th, the entire gland became brawny and the skin pitted. Gentle pressure over the gland with simultaneous milking of the duct from the buccal surface yielded pus at the papilla. The diagnosis was thereupon quite evident. After consultation with the family physician, it was decided to postpone surgical interference temporarily.

Within forty-eight hours, the constitutional symptoms began to subside and the diffuse suppuration appeared to localize into distinct areas of pus collections. One appeared behind the ear and one in front of it. The latter was the smaller of the two because there was spontaneous drainage through the duct.

On April 14th, the posterior abscess was opened and considerable pus was evacuated. Rubber tissue drains were inserted and the wound healed promptly. Cultures from the pus showed a streptococcus identical to the one found in the tonsillar infection.

As soon as the posterior wound began to close the anterior abscess increased in size. It was decided to operate on this abscess also. Drainage through the duct alone was apparently insufficient. A horizontal incision on a line parallel with Stenson's duct was made in order to avoid injury to the duct as well as to the branches of the facial nerve. The healing of the wound was prolonged because a large quantity of salivary secretion was discharging frequently through the wound. For a time it appeared that a fistula would result, but fortunately after several cauterizations the wound healed. The patient was discharged about the middle of June, 1923.

The patient was seen about six months later. While there were no ugly scars, there was, however, a noticeable depression on that side. This was naturally due to the loss of some of the parenchymatous tissue of the gland.

CONCLUSIONS

1. A streptococcic tonsillitis was the immediate cause of a suppurative parotitis. The bacteria obtained from the tonsils and from the gland were identical.

2. This complication resulted in a prolonged illness and a permanent deformity.

3. Drainage through the duct is unreliable. Multiple abscesses are likely to be formed on account of the lobular arrangement of the gland. While there may be some communication between the individual abscesses, perfect drainage is not to be expected through such channels. Each collection of pus will require a separate incision.

4. The question arises, did the infection travel through the duct or lymph and blood channels? One may be inclined to think that an ascending infection through the duct is the most logical way. There are, however, points against this assumption. If infection through the duct were favorable, this complication would take place more often because tonsillar infections occur so frequently. Besides, there are other sources of infection in this vicinity, namely, pus coming from the nasal sinuses through the nasopharyngeal route, pyorrheal and dental infections. Foci of infection within the thoracic and abdominal cavities are more frequently causes of suppurative parotitis and the blood carries the infective material to the gland in these instances.

5. The infrequent occurrence of suppurative parotitis as a result of throat infections is well illustrated in a report of fifty-four cases by Blair and Padgett (1) of Chicago in the *Archives of Surgery*, July, 1923. In this large series, only four cases were due to various throat conditions.

REFERENCE

1. Blair and Padgett: *Archives of Surgery*, July, 1923.

1420 Grand Concourse.

The Preclinical Period and Prophylaxis of Diabetic Gangrene*

HENRY S. STARK, M.D.
New York

While the literature of diabetes has grown to enormous proportions, it remains a conspicuous fact that little of it has been devoted to that phase of diabetes which forms the subject of this communication. It would be difficult indeed to account for this lack of concentration of the medical mind on a topic which from its frequency and seriousness should have invited intensive study. The importance of prophylactic measures to prevent or, at times, to arrest the onset of gangrene has practically been overlooked in our more ambitious efforts to cure the diabetes *in toto*. However, when we recall that every diabetic over fifty years of age is potentially liable to gangrene, and that one in fifty of all diabetics die of gangrene, we can readily understand why this terminal incidence should, in reality, receive as much consideration as the general therapy of the diabetes itself, for a great deal can be accomplished in the way of prophylaxis by judiciously combating certain symptoms which are the inevitable heralders of gangrene—symptoms which are so constant as to give rise to what I may style "a gangrene complex" or syndrome, which once established makes for a serious prognosis.

AVERTING GANGRENE

Some years ago, becoming impressed with the frequency of gangrene as a terminal incidence (namely, about fifteen per cent. of cases), and with the oft time futility of treatment in frank cases, it occurred to me that preventive medicine might offer something in the way of averting gangrene, whether of the diabetic or of the senile type, providing that efforts were directed to the prevention of the endarteritis or the arteriosclerosis frequently set up by the toxic or foreign elements in the circulation—namely, glucose, acetone bodies, or the end products of protein metabolism. If it were possible to secure a normal volume of normal blood to the lower extremity and thereby retard structural and degenerative changes in the vascular coats, it seems reasonable to believe that gangrene could be staved off in a generality of cases. Theoretically, this seems plausible, and I have good reason to believe that on more than one occasion I have succeeded in averting gangrene and thus extended the patient's tenure of life.

Broadly translated, this means that all diabetics during the gangrenous period of the disease—say about fifty years of age—whether or not they display evidences of malnutrition of the limbs, must be looked upon as gangrene suspects. This dictum presses with double weight upon those obese diabetics with an hypertension and those with a complicating nephritis or a myocarditis. Such diabetics need careful watching. Though there be no subjective evidences of approaching gangrene, careful physical tests may reveal that they are in the preclinical stage. At this time, a diabetic presents the following picture: He is over fifty years of age, is likely to be obese with increased blood pressure, has a weak pulmonic second sound, his urine may show renal elements. Over one third of all diabetics of ten years' standing are nephritic. That has been my experience, though some observers claim that this figure is too high. He suffers occasional pains—cramplike—in one calf, even when at rest; or else he may have severe burning pains radiating along the course of a large nerve or bloodvessel of the lower limb. In another group there may be present burning pains of the foot lasting for from a few minutes to several hours, accompanied by redness of the skin, possibly some swelling at the sole, with a point or two of tenderness to pressure. In still another group there may be pains in the calf after a short walk, relieved only by coming to a standstill. When, in addition to these symptoms, there is diminished pulse beat at the popliteal, the anterior or posterior tibial, or dorsalis pedis artery, while the foot itself is cold and clammy to the touch, perhaps dusky in appearance—in all such instances gangrene is imminent. The blood supply is already markedly impaired, while the vascular coats are already the site of lesions.

EARLY SYMPTOMS

Concisely expressed, the earliest premonitions of gangrene are the following: Firstly, pain in the leg accompanied by paresthesias or trophic disturbances; secondly, changes in the lumen of the arteries; and thirdly, diminished pulsations of the dorsalis pedis artery. One cannot emphasize too strongly the importance to the patient of recognizing a case of threatened gangrene rather than to diagnosticate a case of frank gangrene; in the former instance one can hold out hope of a comparatively long life; whereas in the second instance one cannot offer more than a life constantly hanging in the balance.

Since the advent of insulin therapy, the life expectancy of these patients has taken on a more favorable turn. My own files contain a number of cases of threatened gangrene, others even of actual gangrene, in which a course of insulin administration and of appropriate dieting was followed by the disappearance of all signs of circulatory and nutritional disturbances. In other words, there was ample reason to believe that the insulin resulted in partially regenerating the diseased Islands of Langerhans and thus restoring the physiological function of the pancreas. This incidence has been observed frequently, both in human and in canine diabetes. In my own experience I can point to a number of such cases, while followup memoranda of my patients have disclosed no recurrence of the diabetes. In like manner, we can attribute a cure of the endarteritis of diabetic origin to insulin therapy. Several of my cases come under this category, as was visually demonstrated by x ray plates of the bloodvessels of the lower extremity, before and after treatment. These plates showed a disappearance of the arterial sclerosis, thus indirectly emphasizing the value of röntgen photography in all suspected cases of atheroma of bloodvessels; for in diabetics, as proven by necropsy, there occurs a high incidence of arteriosclerosis, which may be readily recognized.

*Read at the February, 1926, meeting of the Clinical Society of the Hospital for Joint Diseases.

That these results were due in part to the use of insulin, there can be little doubt, especially when the improvement in the vascular coats was followed by an amelioration of all the classical symptoms of diabetes. The prophylactic lesson that this experience teaches is that advanced diabetics should be studied röntgenologically at stated intervals for the detection of vascular lesions. A negative plate is an asset in the prophylaxis of gangrene; a positive plate clouds the prognosis. I have recently had a run of cases of complicated diabetes in which a sclerosis of bloodvessels of internal organs was clearly demonstrable, röntgenologically; for example, a patient with outstanding gastric symptoms showed an arteriosclerosis, mostly central in type, involving the celiac axis. Another case of persistent vomiting revealed a sclerosis of the splenic artery. Vascular disease of the lower extremity, if prophylaxis is to be of any avail, must always be anticipated. Once sclerosis or extensive thromboses are proven ocularly, the patient becomes a gangrene suspect. In addition to vascular changes, x ray photos may show changes in bone, such as a beginning bone necrosis or an osteomyelitis.

PROPHYLAXIS

Knowledge of the causation of disease furnishes the clue for prophylaxis; therefore therapeutic measures directed to the prevention of gangrene will embrace: Firstly, the treatment of diabetes itself; and secondly, the treatment of complicating affections, more particularly circulatory and cardiac complications. Before the days of insulin, it was my practice to lay greater stress upon the treatment of the complications than upon the original disease itself—being under the impression that under all circumstances diabetes was a progressive disease that terminated fatally and was rarely amenable to treatment. Today, thanks to experimental therapy, the table is turned in favor of the diabetic, and it is now not unusual to check the progress of the disease. One patient whom I treated in the fall of 1922, and three whom I treated in the summer of 1923, are still sugar free, but under dietary surveillance. Whether they can be designated as cured cases is problematical; at any rate, their power of assimilation for carbohydrates is greatly improved.

INSULIN

The most efficient agency for the prevention of gangrene is insulin, judiciously employed, at the right moment. Whenever circulatory disturbances are manifest in the lower extremity, do not withhold it. Often it will tide the patient over a critical period, and determine the question of gangrene or no gangrene. The aim of treatment is to improve the circulation by means of a normal column of blood—one as free of glucose, acetones, or other foreign substances as it is possible to secure, hoping thereby to enable the diseased coats of the bloodvessels to repair themselves. Whenever one or all of the three signs before mentioned appear, insulin with dietary control is in order. The patient must be on his back, with the foot of the bed raised. Unless the patient consents to keep in the prone position for a long time, treatment will be ineffectual. Naturally, such a procedure entails much hardship and many sacrifices, but desperate conditions call for desperate measures. Rest is the one essential, without which the probability of preventing gangrene is *nil*. I have kept patients on their back for a month or more, but I have saved them from gangrene, and these patients have their legs today. Whenever cardiac symptoms are present—such as pseudoanginal attacks, weak pulsations. weakness of the heart sounds, evidences of decompensation, arrhythmias, or local signs of circulatory disturbance, the need for physical rest is more emphatic. Such a diabetic is a candidate for gangrene. His need of rest is more pressing than his need of digitalis.

IODIDES

Such patients are put on a course of Burnham's soluble iodines, keeping it up for weeks—beginning with eight drops an hour before meals, and increasing by two drops every second day until the patient is taking about thirty drops in plenty of water three times daily. This preparation is easily assimilated, readily absorbed, and rapidly eliminated. It reduces vascular spasm and lowers hypertension; it seems to me to stay the progress of atheroma of the bloodvessels. Diabetics seem to have a remarkable tolerance of it. Two of my patients have now been taking it continuously over a period of two months without signs of gastric irritation or of iodism. It seems to exercise a favorable influence on arterial disease, at least for a time; however, there is no assurance that an aggravation of the sclerosis may not recur, for once a diabetic becomes a gangrene suspect he remains a gangrene suspect the remainder of his life, his lease on life depending upon the period of time he can remain sugar free. This means that the other diabetic, the one in the pregangrenous period, must be treated as energetically as the diabetic in middle life. We must get away from the popular fallacy that old age is an asset to the diabetic. In the public mind, old age is an insurance against the ravages of diabetes. This is plainly fallacious as far as the advent of gangrene is concerned, and of its complications.

A therapeutic measure which is often followed by gratifying results is the application of light and heat rays. This procedure should be employed in all cases of threatened gangrene from vascular disease, more particularly those cases which are accompanied by vascular spasm and pain and sluggish circulation. The relief from pain seems to be due to a reduction of the congestion that is usually a factor in endarteritis. Radiant energy also serves to supply artificial heat to an extremity that is always cold from faulty circulation. Treatments are given three times daily, fifteen minutes at a time, care being taken not to provoke a severe erythema. These seances are followed by gentle massage. Ultraviolet reactions from deep therapy lamps are not, in my opinion, followed by beneficial results.

PASSIVE EXERCISES

A method of treatment devised by Dr. Leo Buerger, of New York, known as Buerger's passive exercises, has received favorable recognition. I employ this method in every case of threatened gangrene; its purpose is to induce an artificial and temporary hyperemia in a limb which is always cold and pale due to a poor blood supply. This treatment, when applied daily and with due care for details, as outlined by the author, will often—not invariably—improve the circulation of the lower extremity.

There are certain details of prophylaxis which should be emphasized in the care of diabetics during the pregangrenous period, which, if ignored, may lead

to disastrous consequences. All diabetics should avoid infection of the foot by guarding against traumatism, either selfinflicted or at the hands of the chiropodist; in the same manner, pressure points from tight footwear should be avoided. At all times the feet must be kept warm and clean, the legs should never be crossed and whenever possible they should be elevated.

IMPORTANCE OF STUDY

When we stop to consider that there are in the United States, according to Joslin, over one million diabetics; and further recall that there are another million persons who are candidates for this disease by reason of heredity or familial tendencies; and, still further, that of this vast number probably one seventh or one eighth will acquire gangrene, the question of prophylaxis looms up as a mighty one. I know of no more laudable ambition on the part of the profession than to give this problem the same study and enthusiasm that it has so successfully given to other therapeutic problems.

1309 MADISON AVENUE.

Dislocation of the Carpal Semilunar Bone.

A Report of Eight Cases

EARL D. McBRIDE, M.D.
Oklahoma City, Oklahoma

The purpose of this article is: 1. To emphasize the disastrous results which can come from failure in early diagnosis and treatment. 2. To portray some distinguishing features chief of which is a fixed deformity of the hand characteristic of neglected cases. 3. To draw some conclusions from cases presented and quoted in the literature as to what to expect regarding permanent disability and method of treatment.

INTRODUCTION

The relative frequency of the injury is briefly discussed with reference to the importance of never failing to keep it in mind when Colles fracture is suspected but not found.

LITERATURE

It is pointed out that various authors who have written on the subject differ widely as to severity of disability and advice as to treatment. This status of the subject is dangerous and confusing so that attempt is made to briefly sum up experiences of various authors and come to some conclusions as to diagnosis, prognosis and treatment.

PATHOLOGY

In neglected cases, the wrist and hand assume a deformity which is constant and as characteristic of this condition as silver fork deformity is to Colles fracture. The cause of this deformity is discussed and attempts made to clear up disputed questions of pathology.

REPORT OF CASES

Eight of my personal cases are quoted in detail. They present well the variations in complications, the results of treatment at different stages, and the possibilities as to final amount of permanent disability under various circumstances.

Case I.—Simple uncomplicated dislocation forward of carpal semilunar. Diagnosis overlooked by competent x ray specialist and attending surgeon. Treated for sprain eight weeks. Severe pain required saturation with morphine. Dislocated bone removed on ninth week. Marked relief in pain. Characteristic fixation deformity of wrist and fingers permanent. Patient died three years later in hospital for the insane, a morphine addict.

Case II.—Multiple injuries of extremely severe type. Dislocation of the semilunar and fracture of scaphoid not diagnosed until fourth week. Characteristic deformity had developed. Semilunar and scaphoid fragment removed at fourth week. Permanent disability to a marked degree.

Case III.—Unreduced dislocation of semilunar of five months standing. Has characteristic deformity but of mild degree. The semilunar was removed. Permanent disability not sufficient to prevent manual labor.

Case IV.—Laborer in broom factory. Nature of accident such that exact mechanics of cause of dislocation were observed by the patient. Semilunar replaced at end of second week by open operation. Result one hundred per cent. perfect.

Case V.—Removal of dislocated semilunar and proximal fragment of scaphoid two months after accident. Fifty per cent. useful hand.

Case VI.—Reduction of semilunar three months after injury. Original method of fixing bone in normal position is described. Result, slightly painful on certain movements because of traumatic arthritis but returned to manual labor.

Case VII.—Dislocation of semilunar and fracture of scaphoid examined three years after injury. No attempt at reduction had ever been made. Suffered intense pain for many months. Was treated for sprain. Result, surprisingly good function in wrist and hand. The patient is at present working as an electrician.

Case VIII.—Dislocated semilunar removed by another surgeon three days after injury. Result, practically normal function of wrist and hand. Not a laborer. Wrist becomes painful while playing tennis.

TREATMENT

Conclusions are drawn from the foregoing material as to the best method of handling the injury and its complications.

Practical Therapeutics

The Hepatic Depressor Principle and Its Oral Administration in Hypertension

HENRY R. HARROWER, M.D.
Glendale, Calif.

The profession is well aware of the interesting and, perhaps, epochmaking developments with a product separated from the liver by certain fractional solvent methods, which is being used both experimentally and clinically in the reduction of high blood pressure.

A number of articles have appeared calling attention to various aspects of this work (1, 2).

Since at least a part of our work with this principle has paralleled that of these other investigators, and their early reports already have been published, it is useless to recapitulate our own experiences with what is probably a similar product.

I wish, however, to announce a development which should be quite important. We have succeeded in separating from the hepatic residue, a product which is active when administered by mouth. I believe that this is an original development, for, so far as I can find, no other work has been done along this line.

Since this substance works so remarkably when administered by injection, it is quite natural to conclude that it is unnecessary to administer it by mouth. I realize that there is a tendency in some parts to decry the oral administration of organotherapeutic products and to lean toward the use of active principles which are separated as completely as possible from their original endocrine source, and administered either by the intramuscular or the intravenous route, as is the case in the laboratory experiments which usually are preliminary to clinical tests.

The records will show that I have an abiding faith in the efficacy of active endocrine products administered by the mouth, and in view of the fact that the encouraging experiences during the last two or three years with insulin have developed a coincident neurological condition amounting almost to a phobia and sometimes known as needle horror, many a physician would welcome an insulin that is active by mouth. These unfortunate experiences have given a more tangible turn to one of the first comments made regarding the advent of insulin by Dr. A. D. Blackader (3): "A treatment which would necessitate frequent subcutaneous injections is always handicapped at the outset."

At all events, in December of last year, after quite an extended experience with this active hepatic principle, a small number of tablets were made up by vacuum concentration of the solution. In the intervening time we have given this product, ourselves, to thirty-seven patients, and, through interested colleagues, to over one hundred additional persons. Besides this, a series of tests with presumably normal medical students has been made in fifty-six cases, and it is upon these 193 cases that I purpose to base my following comments and conclusions.

First of all, it is my opinion that the hepatic residue, which we have been using, contains a true active endocrine principle from the liver, in view of the fact that it has been purified as far as possible, from every associated depressor substance including histamin. (A few words regarding this must be added: Practically every animal extract contains a certain amount of protein derivatives one of which is known as histamin. Macdonald remarks that his product is freed as far as possible from this material, and that his experience with liver substance demonstrates that its influence upon blood pressure, as compared with that of histamin, is less rapid in its onset and more prolonged in its influence.)

This endocrine principle is believed to act chiefly upon the liver, and its presence has been suspected for many years and has been referred to by a number of writers including myself in the book (4), in the following words: ". . . The study of the functions of the liver has been carried on for many years, and as yet we are still very much in the dark as to how this remarkable organ performs its equally remarkable work. The supposition that the liver itself is a source of hormones has been mentioned by several writers, and the fact that its detoxicating function is conceded to be greater than that of any other organ seems to give weight to this suggestion."

"Lorand believes—and his opinions are corroborated by A. Gilbert, H. Strauss, and others—that the liver is a gland with an internal secretion that is strongly antagonistic to intestinal poisons, destroying toxic products brought to it from the intestine by the portal vein. This antitoxic power claimed for the liver is dependent, not upon the blood that may be present in the organ, but upon the liver itself, and the activity of this organ in destroying toxins must be due to some chemical substance at present unknown. A part, at least, of this power remains in vacuum dried extracts, and is probably the source of the benefits which follow its therapeutic administration."

This new principle then, is believed to be this "substance at present unknown," the influence of which is presumed to affect, in a hormonic, catalytic fashion, that part of the hepatic service to the body which concerns detoxication.

The detoxicative activity of the liver may be properly called "anabolism" for it is the business of the liver to build up certain urea precursors like ammonium carbamid, guanidin, cyanamin, and other products into urea. It is this ureagenetic function of the liver that was presumed to be regulated by endocrine influences, originally I think, by MM. Gilbert and Carnot, in Paris, as far back as 1896, at the same time, by the way, that Dr. Oliver and Dr. Schafer, of Edinburgh, were calling the attention of the profession to the pressor influence of the adrenal medullary principle.

I am of the opinion that this hepatic depressor sub-

stance accomplishes its clinical effects upon blood pressure through a true endocrine influence upon the liver detoxication, and parallel with our efforts to perfect it for oral administration, we have been trying to prove to our satisfaction, that it does not act in a pharmacodynamic depressor manner like histamin or the nitrites.

Here are some of the clinical experiences which lend weight to our position: Aside from its capacity to reduce blood pressure in certain cases, it has certain distinct clinical limitations. Administer this anabolic principle to a case of renal impermeability or nephrosclerosis and it has practically no effect whatever. Administer it again to another case with marked arteriosclerosis, and while it may have a slight effect, the results are practically negligible. The nitrites, however, will reduce blood pressure quite markedly, though temporarily, in virtually every case, and it is believed that they do so by certain vasomotor changes, or circulatory gymnastics as they have been called.

Again, a number of patients receiving this hepatic principle have remarked upon subjective personal betterment aside from any change that may have been brought about in the blood pressure. A number of them have felt that there must be something else in the tablets beside a remedy to influence blood pressure. As one of them remarked, "It doesn't make any difference what my blood pressure is today, I know I am a lot better, because I feel better," and this patient didn't believe in Christian Science either.

Now the failures in organic or structural cases with the original hepatic solution were really the first indications to me that the product was not a depressor drug, and, as we have gone along, we have used several laboratory procedures to supplement our sphygmomanometric work. Certain cases with very high pressure, have been obviously toxic and suffering from hepatic derangement. The urine was highly acid, there was a generous trace of indican and the total solids were low. More recently, we have been studying these people from the standpoint of the urinary ammonia and in many cases this is found to be unusually high. This particular syndrome of urinary findings is exactly that which I discussed in several papers published during 1908-10, and we now know, according to Dr. W. M. Barton, of Washington, D. C., that the presence of indican in the urine is "an indication of the detoxicative capacity of the urine." In other words, indican in the urine is not so important an indication of intestinal putrefaction and toxemia, as it is of the inadequacy of the detoxicative disposal of this substance by the liver. It is also believed that the increase in the amount of urinary ammonia, by Malfatti's test, is an indication of a similar hepatic defect, for here the ammonia precursors of urea have not been properly fitted together and they are eliminated in a half way stage.

It may be mentioned that the products of protein metabolism, already referred to, as they reach the liver are highly toxic in small quantities, that they are known to have a decided pressor effect and that urea, despite its bulk, is practically nontoxic, and has no noteworthy effect upon the tension.

Every effort has been made to avoid drawing conclusions that were unwarranted. For instance, it has been suggested that this was merely a toxic substance, which, as with injections of many other proteins, would cause a minor degree of anaphylactic shock with consequent reduction in the blood pressure. There is no shock nor local reaction, nor feeling of illbeing following its use. Besides, injections of foreign proteins into the body cause rapid and transitory changes in the blood pressure, while the effect of this principle, both by mouth and injection, is not so sudden and in many instances, lasts for several days. The type of the reaction to it, therefore, leads us to disbelieve that its influence is due to a form of poisoning.

Again it has been suggested that this residue contains a substance directly antagonistic to adrenin, which interferes with its presumed continuous pressor effect, thus reducing the blood pressure. While I believe in the reality of the clinical state known as hyperadrenia, and that undue stimulation of the adrenals can cause high blood pressure, I do not concede that the results we have been seeing are due to the neutralization of adrenin. It is true that in our animal work we have found, when determining matters pertaining to toxicity and dosage, that rabbits and dogs receiving lethal doses of this hepatic principle, are benefited and their lives saved by suitable doses of epinephrin. This is also true of the use of this drug in various other serious toxic states including the vasomotor paralysis of shock, the serious hypoglycemia of insulin overdose, and in reactions following mass doses of certain other drugs such as arsenic and others.

Just because the abnormal use of this hepatic principle, e. g., in massive dosage in animals, can cause shock and death and because this can be neutralized largely by injections of epinephrin, does not mean that adrenalin normally balances the anabolic, endocrine principle of the liver in the ordinary way, but rather, that epinephrin overcomes the detrimental, physiological reaction caused by its ill advised administration. Incidentally, it is an accepted opinion that the pancreas and the adrenals are directly antagonistic to each other, and that insulin and adrenin are physiological opposites. I cannot believe that this applies also to the liver principle.

Some of the physicians with whom we have been in contact during this investigation, have questioned the accuracy of my assumption that this is an endocrine principle from the liver and that it increases its detoxicative function, or as I have put it "stimulates anabolism."

We have frequently noted that patients receiving this product, and especially the tablets, express themselves favorably upon their own subjective feelings of well being. Granted for the moment that the increase of blood pressure in many functional cases is due to adrenal irritation with a coincidental excess of the adrenal principle, as indeed it might well be, it seems that any plan calculated to encourage the principal detoxicating mechanism of the body—that of the liver—should hasten the destruction of the irritating protein split products which overdrive the kinetic system, and in particular the adrenals. If treatment with this anabolic principle really lessens this toxemia, mitigation of some of the results of the toxemia (through the adrenals upon the pressure) should follow. Perhaps this is exactly how this anabolic,

catalytic influence upon hepatic detoxication actually brings about its depressor effects.

There is another aspect to this upon which we have sought to assure ourselves. If the salutary depressor influences which follow the use of this product in cases with high blood pressure are not due to an endocrine influence or any other kind of an influence upon hepatic detoxication, but, as has been suggested, are a result of a sort of neutralizing effect upon the normal or abnormal amounts of adrenin present in the organism, or are pharmacodynamic in character we should be able to reduce the normal blood pressure by administering this product. Further, if it works in this fashion, its influence should be noticeable under practically all circumstances—in normal as well as hypertensive states. Apparently it does not work this way, for in a series of tests covering a period of ten days in fifty-six medical students, the general impression gained was that this substance has practically no influence upon the normal blood pressure.

The average figures gained from this series of trials may be stated here: Before the test the tension was 116 systolic and 73 diastolic; after it was 114 and 68. The change following the preliminary purge two days before the tablets were started was greater than this negligible variation.

In view of the above, I conclude that, if the liver function is not especially abnormal and, correspondingly, the toxemia is not great, the conditions in which anabolic, hepatic stimulation is called for, are not present, and therefore, we do not get a particularly marked reaction from its use.

On the other hand, report after report indicates that this substance is indeed active when given by mouth. It will not be possible to report the entire series of cases of which we have figures, and I will admit that we do not have any reports extending over a period of many months. The longest time during which a patient under observation has taken this oral product is fifty-eight days, and in this particular instance the blood pressure brought down as far as possible by hygienic measures and previous treatment, was 200-100, and at the end of approximately two months, it was 188-110—a negligible reduction in the systolic tension and even an increase in the diastolic—but as our coincidental studies proved, this patient has renal sclerosis, regarding which I shall have something to say shortly.

A most interesting case has just finished the second week of study. At the beginning of the first week this patient's blood pressure was 188-100 and there was considerable discomfort, dizziness and apprehension. No changes were made in her mode of living, eating or in her work. At the end of seven days, having taken only seven tablets—one each day—the blood pressure was 155-94.

Another case confirmed my faith in the oral activity of this product. A middleaged woman, with what was said to be arteriosclerosis, had for eight weeks been under intensive treatment with diet, elimination and the nitrites. Her systolic pressure was originally 260, but at the time the use of these tablets was started, the pressure was 200-110 and had been stationary for some weeks. The dose in this case was arranged so that the patient consumed fifty tablets, four daily. each representing one c. c. of a hepatic solution which, when administered to a dog weighing ten kilograms, would reduce the blood pressume 12 mm. Her blood pressure at the end of this period was 160-90, and the patient was obviously better subjectively.

Still another patient receiving only tablets started in with the preliminary figure of 220-140. A routine procedure[1] was carried out and the first seven days of the report read as follows:

Date	*Dose Tabs.*	*Syst.*	*Diast.*	*Change*
4-23	1	220	140	——
4-24	2	210	140	10/0
4-25	3	195	136	25/4
4-26	3	185	128	35/12
4-27	3	185	120	35/20
4-28	3	170	115	50/25
4-29	3	166	108	54/32

Still another case in which the figures were uniform was treated in this same routine manner and at the same time with the following results:

Date	*Dose Tabs.*	*Syst.*	*Diast.*	*Change*
4-24	1	215	100	——
4-25	2	212	100	3/0
4-26	3	204	98	11/2
4-27	3	198	95	16/5
4-28	3	195	95	20/5
4-29	3	192	95	23/5
4-30	3	187	93	28/8

Some average figures may be interesting. A series of forty ambulatory cases were treated with varying amounts of this substance and over varying periods. Not all responded well; some were sclerotic cases in whom the changes were negligible. The average reduction amounted to 29 mm. in the systolic, and 12 mm. in the diastolic.

If it is desired merely to prove the activity of the product when given by mouth in suitable cases, a still more remarkable series of average figures can be shown. However, these figures are not true averages. for all the sclerotic cases were excluded, and the maximum drop in tension is recorded—it does not always remain at the lowest point. This series of figures is made up from fourteen cases and is as follows: Average before treatment, 196-111; maximum low figure 154-93, an average reduction of 42-18.

In the course of our studies we have encountered a number of failures and as has already been mentioned, these failures are largely due to sclerotic processes which accompany the hypertension. I do not want to say that this method is contraindicated in this type of case because it seems to have caused some slight changes in several and to have some beneficial effect, but we have come to the conclusion that, when a case makes absolutely no response during a period of not more than a week, the renal function test with phenolsulphonephthalein is going to be below normal. In fact we are almost expecting that a diag-

[1]The following outline was mimeographed and sent with testing supplies of these tablets: "After a preliminary day of fasting, a purge and other hygienic care so as to reduce the blood pressure as much as possible (many patients who have been under treatment for some time already have their hypertension reduced as much as possible and therefore may proceed without these preliminaries), give the patient one tablet in the morning; on the second day two tablets, one in the morning and one in the evening; on the third day, one morning, noon and night; and on the fourth day either the same amount or an additional, fourth, dose. This makes ten tablets in all —the contents of one trial package as at present put up.

"The blood-pressure, systolic and diastolic, should be taken at least once a day, preferably twice. It should be taken before the tablet is swallowed and, as far as possible, at times which in relation to work, activity, meals, etc., are identical each day, for comparative purposes. Do not take the blood-pressure of a patient who has just hurried up the stairs or finished a meal."

nostic measure may be developed upon these experiences.

It is not easy in practice to secure a series of twenty-four hour urine specimens and to make charts of the variations in elimination of certain products. However, we have accumulated enough figures to warrant the presumption that in individuals with toxemia, obvious hepatic insufficiency (endocrine), and hypertension, we may frequently find an increase in the urinary ammonia, and that with the control of the toxemia and the reduction of the blood pressure, there is a coincidental reduction in the ammonia figures.

CONCLUSIONS

I believe that I am justified in drawing the following conclusions from this work:

1. The liver is a gland of internal secretion whose endocrine function is concerned with detoxication, i. e., the destruction of certain metabolites of protien origin.

2. These waste substances are toxic in extremely small quantities; and normally, should be built up by the liver by the process known as ureagenesis, into a nontoxic and easily eliminated waste product, namely, urea.

3. That, where high blood pressure accompanies defective hepatic detoxication, the work of the liver can be increased, and the pressure reduced by the administration of a residue separated from the liver by fractional solvent methods.

4. This anabolic, endocrine principle is not destroyed by digestion, but is quite promptly active when given by mouth. The dosage of this substance should depend upon the status of the patient and should vary in proportion to the response to it.

5. Since the effect of this principle is believed to be catalytic and its influence is brought about through the liver, its effects upon hypertension are predicated upon the presence of an underlying defect in the hepatic detoxication. Its therapeutic value, therefore, should be in proportion to the extent of the toxemia, the hepatic character of the difficulty, and the capacity of the liver to respond to such stimuli. This opinion is further substantiated by the fact that certain persons respond very noticeably to even small doses of this substance, whereas other causes, equally functional in type and just as free from sclerotic changes, respond less rapidly and for a shorter time. Further, in presumably normal cases the effects are negligible.

6. This influence upon the liver is not permanent, but the present status of our early patients indicates that the effects are quite similar to those expected from organotherapy, that is, a gradual educative influence which tends to reestablish a more nearly normal function on the part of the organ that is being treated.

7. The principal interference to the success of this new measure in the treatment of high blood pressure is sclerosis, and sclerosis of the kidneys has a more marked detrimental effect than arteriosclerosis.

8. Finally, the effect of this substance when given by mouth has not at any time been accompanied by any cumulative or detrimental influences; but, on the other hand, irrespective of the degree of depressor effect brought about, in many instances a subjective benefit has been noticed.

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Antitetanic Serum in Tetanus.—A. C. Harrison (*International Journal of Medicine and Surgery,* Vol. XXXVIII, No. 12) finds that prophylaxis is far more important than therapeutics in the treatment of this disease. In considering the prophylactic treatment special stress should be laid on the proper care of wounds at the earliest practicable moment. Wounds properly handled from the beginning are subject to tetanus so rarely as to make it almost negligible. On the other hand some types are so subject to the disease as to make the administration of prophylactic serum mandatory.

In a general way it may be said that wounds occurring in those who work about stables, wounds produced by explosives, crushed wounds that are ground full of street dirt, and all other wounds in which the surgeon is uncertain as to the thoroughness of sterilization, should have prompt prophylactic treatment.

No very clear case can be made out for the value of antitetanic serum as a therapeutic measure, nor can we as yet say what is the best mode of administration. A careful study of the available literature fails to prove the sure value of any particular route or dosage. Up to the present the evidence seems to me to indicate that the result depends much more upon the virulence of the infection and the susceptibility of the subject than upon any special treatment. But it is equally certain that we have no better treatment than serum and therefore it should be used.

As to the routes, the evidence seems to indicate that it is best to combine several routes. Eg. intrathecal, intramuscular and subcutaneous or intravenous, intramuscular, intrathecal. All are debatable and only time and careful study can determine what is best.

Thermocautery in Minor Surgery, Especially in the Treatment of Mastitis.—F. Starlinger (*Wiener klinische Wochenschrift,* May 21, 1925) reports very favorably on the use of the thermocautery in certain conditions. The largest part of the author's cases consisted of circumscribed, localized infections, ranging from slight early infections to large carbuncles of the neck in diabetics. The lymphangitis disappeared on the following day and the infiltration and pain disappeared. On the third day the patient was usually able to be up and about, carrying only a small dry dressing. The cautery point should be sharp. Similar results were observed in the case of furuncles. On withdrawing the cautery, the pus exudes, a wet dressing is applied and the part is put at rest. Good results and rapid are also obtained in carbuncles. The cosmetic results in hemangioma are excellent. The Pacquelin may also be used in severe hemorrhage following the extraction of teeth and in neoplasms that are easily injured, as those on the gums, in the ear, nose, etc. Folliculitis and the common wart are also indications.

The thermocautery is an ideal instrument for the treatment of mastitic abscesses, but it is contraindicated in the diffuse, interstitial inflammations of the mammary gland.

The great advantages of this mode of treatment are: a saving of time, instrumentarium, bandage material, personnel, and painlessness of subsequent treatment, and the abolition of drainage.

Treatment of Nasal Diphtheria Carriers.—Clara Israeli (*Journal of Laboratory and Clinical Medicine,* April, 1925) used a ten per cent. ichthyol ointment for the treatment of diphtheria carriers on five consecutive days. The method was carried out as follows: A piece of absorbent cotton was wound tightly on the end of an applicator, and as much of the ointment as would hold on the end of the swab was carried gently all the way into the nasal cavity, entering the nasopharynx; another swab is used in the same way in the other nasal orifice. This procedure is recommended as simple, inexpensive, and easily applied. The time is comparatively short, depending on faithfulness of the application.

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Incidence of Pulmonary Complication Following Ether and Ethylene-ether Anesthesia for Surgical Procedures in the Upper Abdomen*

JOHN S. LUNDY, M.D.

Rochester, Minnesota

In order to establish a statistical basis for the comparison of ethylene-ether and ether in their efficacy, and their effect on postoperative pulmonary complications and mortality, the results in two parellel series of six hundred cases have been tabulated. To make the two series analogous, each operation under ethylene-ether has a corresponding operation under ether, the site of the operation being similar, and the date and meteorologic conditions identical in each pair. Operation in the first case in each series took place January 1, 1924, and in the last case December 31, 1924. So far as conditions could be controlled the only variant was the anesthetic.

Ether was administered by the usual open drop method. When ethylene and ether were combined, a machine was used for controlling the amount of each. The greatest possible percentage of ethylene was used and only enough ether added to bring about surgical anesthesia. On account of the nature of the operation, greater relaxation is required for operations on the gallbladder than for those on the stomach, and sometimes several ounces of ether were necessary in the former. In such cases, although the anesthetic was classed as ethylene-ether, it was practically little different from ether.

The data bear chiefly on postoperative pulmonary complications and their relation to the original lesion, to the type of anesthetic, and to preliminary medication. The postoperative period is the time spent in the hospital after operation. Data with regard to age, sex, and operative risk are also presented. Consideration of the cause of postoperative pulmonary complications and the reported statistics of others may be found in the current literature. (1-19.)

Table 1. Comparative results of the anesthetic

Diagnosis	Anesthetic	Cases	Males	Per cent	Females	Per cent	Preliminary medication: None	Per cent	Morphin	Per cent	Atropin	Per cent	Operative risk: 1	Per cent	2	Per cent	3	Per cent	4	Per cent	Postoperative pulmonary complications: Bronchopneumonia	Per cent	Atelectasis (massive collapse)	Per cent	Bronchitis	Per cent	Pleurisy	Per cent	Pneumonia and bronchitis	Per cent	Cough	Per cent	Success of anesthesia: Satisfactory	Per cent	Unsatisfactory	Per cent	Fair	Per cent	Deaths: Anesthetic partly responsible	Per cent	Anesthetic not responsible	Per cent	Total	Per cent
Duodenal ulcer	Ethylene and ether	280	214	76.4	66	23.5	156	55.8	124	45.0	-	-	169	60.3	104	37.0	7	2.4	-	-	5	1.7	1	0.3	2	0.7	-	-	14	5.0	238	85.0	31	11.1	11	3.9	2	0.7	4	1.4	6	2.1
Duodenal ulcer	Ether	280	217	77.5	63	22.5	164	58.1	114	40.7	2	0.7	179	63.8	97	34.6	4	1.3	-	-	13	4.6	-	-	9	3.2	3	1.0	1	0.3	3	1.0	236	84.2	39	13.5	5	1.7	3	1.0	3	1.0	6	2.1
Gastric ulcer	Ethylene and ether	33	25	75.7	8	24.2	18	54.8	15	45.4	-	-	13	39.3	18	54.4	2	6.0	-	-	-	-	-	-	1	3.0	-	-	-	-	2	6.0	31	93.9	2	6.0	-	-	-	-	-	-
Gastric ulcer	Ether	33	27	81.8	6	18.1	20	60.6	13	39.3	-	-	13	39.3	20	60.6	-	-	-	-	3	9.0	-	-	1	3.0	-	-	-	-	2	6.0	27	81.8	5	15.1	1	3.0	-	-	1	3.0	1	3.0
Cholecystic disease	Ethylene and ether	287	80	27.8	207	72.1	152	52.9	135	47.1	-	-	133	46.2	145	50.5	9	3.1	-	-	4	1.4	1	0.3	2	0.6	3	1.0	-	-	17	5.9	225	78.3	59	20.5	3	1.0	1	0.3	2	0.6	3	1.0
Cholecystic disease	Ether	287	74	25.7	213	74.2	220	76.6	64	22.2	3	1.0	159	54.6	116	40.0	12	4.1	1	0.3	6	2.0	1	0.3	5	1.7	6	2.0	-	-	6	2.0	253	88.1	32	11.1	2	0.6	3	1.0	2	0.6	5	1.7
	Ethylene and ether	600	319	53.1	281	46.8	326	54.3	274	45.6	-	-	315	52.5	267	44.5	18	3.0	-	-	9	1.5	2	0.3	4	0.6	5	0.8	-	-	33	5.5	494	82.3	92	15.3	14	2.3	3	0.5	6	1.0	9	1.5
	Ether	600	318	53.0	282	47.0	404	67.4	191	31.8	5	0.8	351	58.5	233	38.8	16	2.6	1	0.1	22	3.6	1	0.1	15	2.5	9	1.3	1	0.1	11	1.8	516	86.0	76	12.6	8	1.1	6	1.0	6	1.0	12	2.0
		1200	637	53.0	563	46.9	730	60.8	465	38.7	5	0.4	666	55.4	499	41.5	34	2.7	1	.08	31	2.5	3	0.2	19	1.6	14	1.1	1	.08	44	3.6	1010	84.1	168	14.0	22	1.8	9	0.7	12	1.0	21	1.7
Cholecystitis with cholelithiasis	Ethylene and ether	172	52	30.2	120	69.7	91	52.9	81	47.0	-	-	69	40.1	95	55.5	8	4.6	-	-	2	1.1	1	0.5	-	-	3	1.7	-	-	13	7.5	134	77.9	36	20.9	2	1.1	1	0.5	-	-	1	0.5
Cholecystitis with cholelithiasis	Ether	172	50	29.0	122	70.9	136	79.0	34	19.7	2	1.1	83	48.2	78	45.3	10	5.2	1	0.5	4	2.3	1	0.5	3	1.7	3	1.7	-	-	5	2.9	148	86.0	24	13.3	-	-	3	1.7	2	1.1	5	2.9
Cholecystitis without cholelithiasis	Ethylene and ether	115	28	24.3	87	75.6	61	53.0	54	46.9	-	-	64	55.6	50	43.4	1	0.8	-	-	2	1.7	-	-	2	1.7	-	-	-	-	4	3.4	91	79.1	23	20.0	1	0.8	-	-	2	1.7	2	1.7
Cholecystitis without cholelithiasis	Ether	115	24	20.8	91	79.1	84	73.0	30	26.0	1	0.8	76	44.1	37	32.1	2	1.7	-	-	2	1.7	1	0.8	2	1.7	3	2.6	-	-	1	1.7	105	91.3	8	6.9	2	1.7	-	-	-	-	-	-

COMPARATIVE RESULTS WITH REFERENCE TO THE DISEASE

Duodenal ulcer (500 cases).—In Table 1 two groups of duodenal ulcers are compared. In 280 cases ethylene-oxygen-ether was employed, and in 280 cases ether was given by the open drop method. The percentages in each group are about the same as regards sex, risk, and preliminary medication. A most

*Read before the Vancouver Medical Association, Vancouver, B. C., September 14, 1925; and before the Pierce County Medical Association, Tacoma, Washington, September 22, 1925.

From the Section on Anesthesia, Mayo Clinic.

Table 2. Data on preliminary medication

Diagnosis	Anesthetic	Cases	Males	Per cent	Females	Per cent	Preliminary medication	Operative risk 1	Per cent	2	Per cent	3	Per cent	4	Per cent	Postoperative pulmonary complications Bronchopneumonia	Per cent	Pulmonary embolism	Per cent	Bronchitis	Per cent	Pleurisy	Per cent	Pleurisy and bronchitis	Per cent	Cough	Per cent	Success of anesthesia Satisfactory	Per cent	Fair	Per cent	Unsatisfactory	Per cent	Deaths Anesthetic partly responsible	Per cent	Anesthetic not responsible	Per cent	Total	Per cent
Duodenal ulcer	Ethylene-ether	156	119	76.2	37	23.7	None	93	59.1	59	37.7	4	2.5	-	-	-	-	-	——	1	0.6	2	1.2	-	-	7	4.7	125	80.1	8	5.1	23	14.7	1	0.6	1	0.6	2	1.2
Duodenal ulcer	Ethylene-ether	43	30	69.7	13	30.2	Morphin	27	62.7	14	32.5	2	4.7	-	-	2	4.7	-	-	-	-	-	-	-	-	3	6.9	37	86.0	1	2.3	5	11.6	1	2.3	-	-	1	2.3
Duodenal ulcer	Ethylene-ether	81	65	80.2	16	19.7	Morphin and Atropin	49	60.4	31	38.2	1	1.2	-	-	3	3.7	1	1.2	-	-	-	-	-	-	4	4.9	76	93.8	3	3.7	2	3.7	-	-	3	3.7	3	3.7
Duodenal ulcer	Ethylene-ether	124	95	76.6	29	23.3	Total Morphin	76	61.2	68	44.3	3	2.4	-	-	5	4.0	1	0.8	-	-	-	-	-	-	7	5.6	113	91.1	3	2.4	8	6.4	1	0.8	3	2.4	4	3.2
Duodenal ulcer	Ether	164	125	76.2	39	23.7	None	106	64.6	55	33.4	3	1.8	-	-	5	3.0	-	-	9	5.4	-	-	-	-	1	1.8	137	83.5	4	2.4	23	14.0	1	0.6	2	1.2	3	1.8
Duodenal ulcer	Ether	51	36	70.5	15	29.4	Morphin	27	52.9	23	45.0	1	1.9	-	-	5	9.8	-	-	-	-	3	5.8	1	1.9	-	-	41	80.3	-	-	10	19.5	-	-	-	-	-	-
Duodenal ulcer	Ether	63	54	85.7	9	14.2	Morphin and Atropin	46	72.9	17	26.9	-	-	-	-	3	4.7	-	-	-	-	-	-	-	-	2	3.1	56	88.8	1	1.5	6	9.5	2	3.1	1	1.5	3	4.7
Duodenal ulcer	Ether	114	90	78.9	24	21.0	Total Morphin	73	63.9	40	35.0	1	0.8	-	-	8	7.0	-	-	-	-	3	2.6	1	0.8	2	1.7	97	85.0	1	0.8	16	14.0	2	1.7	1	0.8	3	2.6
Duodenal ulcer	Ether	2	2	100	-	-	Atropin	-	-	2	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	100	-	-	-	-	-	-	-	-	-	-
Gastric ulcer	Ethylene-ether	16	14	77.7	4	22.2	None	7	42.2	10	65.5	1	5.5	-	-	-	-	-	-	1	5.5	-	-	-	-	-	-	17	94.4	-	-	1	5.5	-	-	-	-	-	-
Gastric ulcer	Ethylene-ether	3	2	66.6	1	33.3	Morphin	-	-	2	66.6	1	33.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	100	-	-	-	-	-	-	-	-	-	-
Gastric ulcer	Ethylene-ether	12	9	75.0	3	25.0	Morphin and Atropin	6	50.0	6	50.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	16.6	11	91.7	-	-	1	8.3	-	-	-	-	-	-
Gastric ulcer	Ethylene-ether	15	11	73.3	4	26.6	Total Morphin	6	40.0	8	53.2	1	6.6	-	-	-	-	-	-	-	-	-	-	-	-	2	13.3	14	93.3	-	-	1	6.6	-	-	-	-	-	-
Gastric ulcer	Ether	20	18	90.0	2	10.0	None	8	40.0	12	60.0	-	-	-	-	3	15.0	-	-	1	5.0	-	-	-	-	1	5.0	17	85.0	1	5.0	2	10.0	-	-	1	5.0	1	5.0
Gastric ulcer	Ether	6	3	50.0	3	50.0	Morphin	3	50.0	3	50.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	16.6	4	66.6	-	-	2	33.3	-	-	-	-	-	-
Gastric ulcer	Ether	7	6	85.7	1	14.2	Morphin and Atropin	2	28.4	5	71.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	85.7	-	-	1	14.2	-	-	-	-	-	-
Gastric ulcer	Ether	13	9	69.2	4	30.7	Total Morphin	5	38.3	8	61.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	7.6	10	76.9	-	-	3	23.0	-	-	-	-	-	-
Cholecystic disease	Ethylene-ether	152	46	30.2	106	69.7	None	71	46.6	75	49.2	6	3.9	-	-	2	1.3	-	-	2	1.3	2	1.3	-	-	11	7.2	122	80.2	3	1.9	27	17.7	-	-	1	0.6	1	0.6
Cholecystic disease	Ethylene-ether	63	15	23.8	48	76.1	Morphin	30	47.5	32	50.7	1	1.5	-	-	1	1.5	-	-	-	-	1	1.5	-	-	2	3.1	46	73.0	-	-	17	26.9	-	-	-	-	-	-
Cholecystic disease	Ethylene-ether	72	19	26.3	53	73.6	Morphin and Atropin	32	44.4	38	52.7	2	2.7	-	-	1	1.3	1	1.3	-	-	-	-	-	-	4	5.5	57	79.1	-	-	15	20.8	1	1.3	1	1.3	2	2.7
Cholecystic disease	Ethylene-ether	135	34	25.1	101	74.8	Total Morphin	62	45.8	70	51.7	3	2.2	-	-	2	1.4	1	0.7	-	-	1	0.7	-	-	6	4.4	103	76.2	-	-	32	23.7	1	0.7	1	0.7	2	1.4
Cholecystic disease	Ether	220	57	25.4	163	74.0	None	121	54.9	91	40.4	7	3.1	1	0.4	2	0.9	-	-	5	2.2	6	2.7	-	-	4	1.8	197	89.5	2	0.9	21	9.5	2	0.9	1	0.4	3	1.3
Cholecystic disease	Ether	25	8	32.0	17	68.0	Morphin	15	60.0	9	36.0	1	4.0	-	-	3	12.0	-	-	-	-	*	-	-	-	-	-	21	84.0	-	-	4	16.0	1	4.0	1	4.0	2	8.0
Cholecystic disease	Ether	39	9	23.0	30	76.9	Morphin and Atropin	21	54.7	14	35.8	4	10.2	-	-	1	2.5	1	2.5	-	-	-	-	-	-	2	5.1	32	82.0	-	-	7	17.9	-	-	-	-	-	-
Cholecystic disease	Ether	64	17	26.5	47	73.4	Total Morphin	36	56.1	23	35.8	5	7.7	-	-	4	6.2	1	1.5	-	-	-	-	-	-	2	3.1	53	82.8	-	-	11	17.1	1	1.5	1	1.5	2	3.1

striking difference occurs in the number of cases of postoperative bronchopneumonia, 1.7 per cent. following ethylene-ether and 4.6 per cent. following open drop ether. There was even a greater difference in the number of post operative cases of bronchitis: 0.3 per cent. after ethylene-ether and 3.2 per cent. after ether. The incidence of pohstoperative cough following ethylene-ether was five per cent. and following open drop ether one per cent., but a number of patients in the ethylene-ether group were operated on before a preoperative cough subsided, while in the ether group most of the patients had no cough at the time of operation. The anesthesia was considered satisfactory in eighty-five per cent. of the ethylene-ether cases and in 84.2 per cent. of the ether cases. Anesthesia was considered satisfactory when the patient's color was good; there was no rigidity, no mucous or struggling, and generally no difficulty with the anesthetic at the time of operation. The surgical mortality in each group is 2.1 per cent. Six of the patients with duodenal ulcer who were given given ether, six died; in three cases I considered the anesthetic partly responsible for their deaths. They represent 0.7 per cent. of the 280 cases of duodenal ulcer in which ethylene-ether was given and 33.3 per cent. of the deaths in this particular group.

Of the 280 patients with duodenal ulcer who were given ether, six died;; in three cases I considered the anesthetic partly responsible. In each group there was practically the same number of patients who used tobacco excessively. There were, no doubt, many other patients in each group who used tobacco but were not so recorded. Statistics relative to the effect of tobacco are not included in the tables.

Gastric ulcer (*sixty-six cases*).—Half the patients in this group were given ethylene-ether and the other half open drop ether. The percentage in each group is about the same as regards sex, risk, and preliminary medication. Nine per cent. of the patients given ether had brochopneumonia, while none of the patients given ethylene-ether had it. The incidence of bronchitis was the same in each group, as was that of postoperative cough. Satisfactory anesthesia was obtained in 93.9 per cent. of the patients given ethylene-ether and in 81.8 per cent. of the patients given open drop ether. There was only one death in the gastric ulcer group, and in that case ether had been given. I did not consider the anesthetic at all responsible for the death. There were no deaths among the patients given ethylene-ether. There were about the same number of persons in each group who used tobacco to excess.

Cholecystic disease (*574 cases*).—Half of the patients in this group were given ethylene-ether and the other half open drop ether. The percentage in each group is about the same as regards sex and risk but there is quite a difference in the preliminary medication. None was used in 52.9 per cent. of the ethylene-ether cases and in 76.6 per cent. of the ether cases. Morphine or morphine and atropine was given in 47.1 per cent. of the ethylene-ether cases and in only 23.4 per cent. of the ether cases. Bronchopneumonia developed in 1.4 per cent. of the cases following ethylene-ether and in 2 per cent. of the cases following ether. After each type of anesthetic pulmonary embolism occurred in 0.3 per cent. of the cases. Bronchitis appeared in 0.6 per cent. of the ethylene-ether cases and in 1.7 per cent. of the ether cases. There were twice as many cases of pleurisy (two per cent.) following ether as there were after ethylene-ether. Postoperative cough was present in 5.9 per cent. of the ethylene-ether cases and in two per cent. of the ether cases. Satisfactory anesthesia was obtaind in 78.3 per cent. of the ethylene-ether

Table 3. Data from diagnostic viewpoint

Diagnosis	Cases	Males	Per cent.	Females	Per cent	Preliminary medication						Operative risk								Success of anesthesia					Postoperative pulmonary complications												Deaths			
						None	Per cent	Morphin	Per cent	Atropin	Per cent	1	Per cent	2	Per cent	3	Per cent	4	Per cent	Satisfactory	Per cent	Fair	Per cent	Unsatisfactory	Per cent	Bronchopneumonia	Per cent	Pulmonary embolism	Per cent	Pleurisy	Per cent	Bronchitis	Per cent	Pleurisy and bronchitis	Per cent	Cough	Per cent	Anesthesia partly responsible	Per cent	Anesthesia not responsible	Per cent	Total	Per cent
Duodenal ulcer	560	431	76.9	129	23.0	320	55.3	238	42.5	2	0.3	348	61.9	201	35.7	11	1.8	-	-	474	84.5	16	2.8	70	12.5	18	3.2	1	0.1	10	1.7	5	0.9	1	0.1	17	3.0	5	0.9	7	1.2	12	2.1
Gastric ulcer	66	52	78.7	14	21.2	38	57.5	28	42.4	-	-	26	39.3	38	57.5	2	3.0	-	-	58	87.8	1	1.5	7	10.6	3	4.5	-	-	2	3.0	-	-	-	-	4	6.0	-	-	1	1.5	1	1.5
Cholecystic disease	574	154	26.8	420	62.6	372	64.8	199	34.6	3	0.5	292	50.7	260	45.2	21	3.5	1	0.1	478	83.2	5	0.8	91	15.8	10	1.7	2	0.3	7	1.2	9	1.5	-	-	23	4.0	4	0.6	4	0.6	8	1.3
Cholecystitis with cholelithiasis	344	102	29.6	242	70.3	227	65.9	115	33.1	2	0.5	152	44.1	173	50.2	18	5.1	1	0.2	282	81.9	2	0.5	60	17.4	6	1.7	2	0.5	3	0.8	6	1.7	-	-	18	5.2	4	1.1	2	0.5	6	1.7
Cholecystitis without cholelithiasis	230	52	22.6	178	77.3	145	63.0	84	36.5	1	0.4	140	60.8	87	37.7	3	1.3	-	-	196	85.2	3	1.3	31	13.4	4	1.7	-	-	4	1.7	3	1.2	-	-	5	2.1	-	-	2	0.8	2	0.8

cases and in 88.1 per cent. of the ether cases. The mortality in the ethylene-ether group was one per cent., and in the ether group, 1.7 per cent. In one case of cholecystic disease (0.3 per cent. of the gallbladder cases) in which ethylene-ether was used, I considered the anesthetic partly responsible. This one death is 33.3 per cent. of the deaths occurring in the cases of cholecystic disease following ethylene-ether. I considered the anesthetic partly responsible for three deaths (one per cent.) following operation for cholecystic disease when ether was given. These three deaths are sixty per cent. of the deaths following the administration of ether in cases of cholecystic disease.

Cholecystitis with cholelithiasis (344 cases).—The entire series of cases of cholecystitis has been divided according to the presence or absence of cholelithiasis. Gallstones were present in 344 cases. In half of them the anesthetic used was ethylene and ether, and in the other half open drop ether. The percentage as regards sex and risks was about the same in the ethylene-ether group and the ether group. Of the 172 cases of cholecystitis with stones in which ethylene and ether was administered, no preliminary medication was used in ninety-one (52.9 per cent.), and morphine or morphine and atropine was used in eighty-one (forty-seven per cent.). In a similar group in which ether was used, preliminary medication was omitted in 136 cases (seventy-nine per cent.), while morphine or morphine and atropine was given in thirty-four (19.7 per cent.). Of these cases in the ethylene-group postoperative bronchopneumonia appeared in two (1.1 per cent.); and of a similar number in the ether group, postoperative bronchopneumonia appeared in four (2.3 per cent.). There was one case of pulmonary embolism in each of these groups. Postoperative cough occurred in 7.5 per cent. of the cases after ethylene-ether and in 2.9 per cent. of the cases after ether. Satisfactory anesthesia was obtained in 77.9 per cent. of the cases in the ethylene-ether group and in eighty-six per cent. of the ether group. Death occurred in one case (0.5 per cent.) of those in the ethylene-ether group; I considered the anesthetic partly responsi-

Table 4. Pulmonary complications

Postoperative pulmonary complications	Diagnosis	Cases	Males	Females	Youngest patient, yrs.	Sex	Oldest patient, yrs	Sex	Average age, years	Preliminary medication			Operative risk				Anesthetic		Success of anesthesia			Deaths	
										None	Morphin	Atropin	1	2	3	4	Ethylene-ether	Ether	Satisfactory	Fair	Unsatisfactory	Anesthesia partly responsible	Anesthesia not responsible
Bronchopneumonia	Duodenal ulcer	18	16	2	20	M	66	M	41.2	5	13	-	13	5	-	-	5	13	14	-	4	2	-
Bronchopneumonia	Cholecystic disease	10	8	2	19	M	64	F	48.2	4	6	-	5	5	-	-	4	6	7	-	3	2	1
Bronchopneumonia	Gastric ulcer	3	3	-	32	M	55	M	41.0	3	-	-	1	2	-	-	-	3	1	-	2	-	-
Pulmonary embolism	Duodenal ulcer	1	1	-	29	M	29	M	29.0	-	1	-	1	-	-	-	1	-	1	-	-	-	-
Pulmonary embolism	Cholecystic disease	2	2	-	53	M	55	M	54.0	1	1	-	1	1	-	-	1	1	2	-	-	-	1
Bronchitis	Duodenal ulcer	10	9	1	26	M	54	F	39.0	10	-	-	5	5	-	-	1	9	8	-	2	-	-
Bronchitis	Gastric ulcer	2	2	-	44	M	62	M	53.0	2	-	-	1	1	-	-	1	1	2	-	-	-	-
Bronchitis	Cholecystic disease	7	4	3	27	M	63	F	42.0	7	-	-	6	2	-	-	2	5	5	-	2	-	-
Pleurisy	Duodenal ulcer	5	4	1	27	M	56	M	46.0	2	3	-	3	2	-	-	2	3	4	-	1	-	-
Pleurisy	Cholecystic disease	9	2	7	31	F	66	F	47.5	8	1	-	3	5	1	-	3	6	9	-	-	-	-
Pleurisy and bronchitis	Duodenal ulcer	1	1	-	43	M	43	M	43.0	1	-	-	1	-	-	-	-	1	1	-	-	-	-
Postoperative cough	Duodenal ulcer	17	15	2	25	M	66	M	42.5	8	9	-	8	9	-	-	14	3	15	1	1	-	-
Postoperative cough	Gastric ulcer	4	4	-	28	M	55	M	42.0	1	3	-	2	2	-	-	2	2	4	-	-	-	-
Postoperative cough	Cholecystic disease	23	11	12	25	F	66	M	49.0	15	8	-	10	12	1	-	17	6	17	-	6	-	-
Total bronchopneumonia		31	27	4	19	M	66	M	43.4	12	19	-	19	12	-	-	9	22	22	-	9	4	1
Total pulmonary embolism		3	3	-	29	M	55	M	46.0	1	2	-	2	1	-	-	2	1	3	-	-	-	1
Total bronchitis		19	15	4	26	M	63	F	45.0	19	-	-	11	8	-	-	4	15	15	-	4	-	-
Total pleurisy		14	6	8	27	M	66	F	46.7	10	4	-	6	7	1	-	5	9	13	-	1	-	-
Total pleurisy and bronchitis		1	1	-	43	M	43	M	43.0	1	-	-	1	-	-	-	-	1	1	-	-	-	-
Total postoperative cough		44	30	14	25 25	M F	66	M	44.5	24	20	-	20	23	1	-	33	11	36	1	7	-	-
Totals		112	82	30	19	M	66 66	M F	44.7	67	45	-	59	51	2	-	53	59	90	1	21	4	2

ble. Death occurred in five cases (2.9 per cent.) in the ether group; I considered the anesthetic partly responsible in three instances.

Cholecystitis without cholelithiasis (230 cases).—Each type of anesthetic was administered to half the patients. The percentage was much the same as regards sex and risk. No preliminary medication was used in fifty-three per cent. of the ethylene-ether cases or in seventy-three per cent. of the ether cases. Morphine, or morphine and atropine, was used in 46.9 per cent. of the ethylene-ether cases and in twenty-six per cent. of the ether cases. The incidence of postoperative bronchopneumonia was the same in the ethylene-ether group and the ether group (1.7 per cent.). Postoperative cough occurred in 3.4 per cent. of the cases in the ethylene-ether group and in 1.7 per cent. of the cases in the ether group. Satisfactory anesthesia was obtained in 79.1 per cent. of the ethylene-ether cases and in 91.3 per cent. of the ether cases. There was a mortality of 1.7 per cent. in the ethylene-ether group. I considered neither one of these two deaths due to the anesthetic. There were no deaths among the patients who were given ether.

COMPARATIVE RESULTS WITH REFERENCE TO THE ANESTHETIC (Table 1)

Comparison of the six hundred cases in the ethylene and ether group with the six hundred cases in the open drop ether group shows the totals to be much the same in each as regards sex and risks. On the whole, there was considerable difference in each group in the number of patients given preoperative medication; morphine, or morphine and atropine, was administered in 45.6 per cent. of the cases in the ethylene-ether group and in 31.8 per cent. of the cases in the ether group. Bronchopneumonia occurred in 1.5 per cent. of the cases in the ethylene-ether group and in 3.6 per cent. of the cases in the ether group, regardless of the type of upper abdominal operation performed. Pulmonary embolism occurred in three tenths per cent. of the cases in the ethylene-ether group and in one tenth per cent. of the cases in the ether group. Bronchitis following ether (2.5 per cent.) was much more common than after ethylene and ether (six tenths per cent.). Postoperative cough was found in 5.5 per cent. of the ethylene-ether cases and in but 1.8 per cent. of the ether cases, an explanation for which has already been offered. Anesthesia was rated as satisfactory in 82.3 per cent. of the ethylene-ether cases and in 86 per cent. of the ether cases. There was a mortality in the ethylene-ether group of 1.5 per cent. (nine cases) and in the ether group of 2 per cent. (twelve cases). Of the nine cases of death in the ethylene-ether group, I considered the anesthetic partly responsible in all but three instances. Of the twelve cases of death in the ether group, I considered the anesthetic partly responsible for the outcome in six instances.

RESULTS IN THE ENTIRE SERIES

In 60.8 per cent. of the cases there was no preliminary medication, and in 38.7 per cent. there was preoperative medication. Postoperative broncho-

Table 5. Mortality

	Diagnosis	Anesthetic	Sex	Age	Weight	Height	Usual blood pressure	Preliminary medication	Operative risk	Date of operation, 1924	Duration of anesthesia	Duration of operation	Pulse during operation	Date of death, 1924	Cause of death
Group 1	Duodenal ulcer	Ether	M	28	166	5'8"	120/75	Morphin 1/6 gr. Atropin 1/150 gr.	2	10-20	8:20-9:20	8:30-9:30	90	10-24	Postoperative hemorrhage, intestinal toxemia, possibly peritonitis.
	Duodenal ulcer	Ether	M	45	155	5'11"	110/80	None	1	7-10	8:40-9:25	8:45-9:35	86	7-21	General peritonitis.
	Duodenal ulcer	Ether	M	70	145	?	128/70	None	3	7-22	9:15-10:05	9:20-10:10	84	7-25	Myocardial failure following gastroenterostomy: anesthetic at least partly responsible.
	Duodenal ulcer	Ether	F	45	150	?	128/82	None	1	4-11	2:36-3:14	2:43-3:23	92-100	4-20	General peritonitis and infected wound from gastroenterostomy.
	Duodenal ulcer	Ether	M	38	163	5'8"	130/90	Morphin 1/6 gr.	1	1-8	8:15-9:00	8:22-9:10	100-110	1-19	Bilateral bronchopneumonia and pleurisy, (mild diabetes): anesthetic at least partly responsible.
	Duodenal ulcer	Ether	M	43	139	5'3"	124/75	Morphin 1/6 gr. Atropin 1/150 gr.	1	3-14	12:20-1:05	12:25-1:15	74-100	3-23	Bilateral bronchopneumonia with probable right empyema: anesthetic at least partly responsible.
	Duodenal ulcer	Ethylene-ether	M	37	160	5'9"	120/80	Morphin 1/6 gr. Atropin 1/150 gr.	2	6-20	9:40-10:25	9:45-10:30	96	6-22	Cholecystitis and duodenal ulcer. Necropsy refused.
	Duodenal ulcer	Ethylene-ether	M	66	135	5'8"	125/80	Morphin 1/6 gr.	1	8-2	8:25-9:17	8:30-9:30	80-84	8-10	Duodenal ulcer, bilateral bronchopneumonia and pleuritis: anesthetic at least partly responsible.
Group 2	Duodenal ulcer	Ethylene-ether	F	59	123	5'5"	150/98	Morphin 1/6 gr. Atropin 1/150 gr.	1	2-8	9:17-9:40	9:19-9:45	92-88	2-18	Abdominal carcinomatosis, general peritonitis, terminal bronchopneumonia. Necropsy refused.
	Duodenal ulcer	Ethylene-ether	M	48	180	5'7"	122/76	Morphin 1/6 gr. Atropin 1/150 gr.	1	1-28	9:08-9:58	9:12-10:01	80	1-31	General peritonitis and hemorrhage.
	Duodenal ulcer	Ethylene-ether	M	60	154	5'9"	130/90	None	2	4-30	8:00-9:15	8:05-9:20	80-72	5-10	Local and general peritonitis.
	Duodenal ulcer	Ethylene-ether	M	43	175	?	100/70	None	2	1-21	10:16-11:12	10:21-11:17	82-75	2-3	General peritonitis and bronchopneumonia: anesthetic at least partly responsible.
	Cholecystitis with cholelithiasis	Ether	M	73	122	5'8"	115/72	Morphin 1/6 gr.	3	7-30	8:35-9:05	8:40-9:10	70-74	8-11	Hemorrhage following cholecystostomy.
	Cholecystitis with cholelithiasis	Ether	M	53	214	5'10"	122/78	None	2	11-11	9:20-10:07	9:30-10:15	68-92	11-25	Cholecystitis with cholelithiasis, pulmonary embolism, peritonitis.
Group 3	Cholecystitis with cholelithiasis	Ether	M	55	166	5'5"	148/95	None	2	12-16	8:48-9:28	8:55-9:32	80	12-21	Cholecystitis with cholelithiasis, myocarditis, bronchopneumonia, peritonitis: anesthetic at least partly responsible.
	Cholecystitis with cholelithiasis	Ether	F	66	149	?	180/80	None	2	1-10	2:00-4:45	2:10-5:06	80-100	1-13	Subacute cholecystitis with cholelithiasis, bronchopneumonia following cholecystostomy: anesthetic at least partly responsible.
	Cholecystitis with cholelithiasis	Ether	M	69	?	?	160/90	Morphin 1/6 gr.	1	9-9	5:07-6:08	5:11-6:35	80-90	9-16	Peritonitis and adhesions following appendectomy, postoperative pneumonia: anesthetic at least partly responsible.
	Cholecystitis with cholelithiasis	Ethylene-ether	M	54	180	6'	130/80	None	2	1-9	8:50-9:15	8:55-9:12	80-80	1-23	Acute nephritis following cholecystectomy. Necropsy refused: anesthetic at least partly responsible.
Group 4	Cholecystitis without cholelithiasis	Ethylene-ether	M	60	?	?	90/56	Morphin 1/6 gr. Atropin 1/150 gr.	2	1-10	11:15-11:45	11:19-11:47	72-118	2-2	Cholangitis, multiple abscesses of liver, cholecystostomy.
	Cholecystitis without cholelithiasis	Ethylene-ether	M	37	150	5'9"	120/80	Morphin 1/6 gr. Atropin 1/150 gr.	2	6-20	9:40-10:25	9:45-10:30	88-100	6-22	Postoperative bilateral bronchopneumonia. Necropsy refused: anesthetic at least partly responsible.
	Gastric ulcer	Ether	M	34	150	5'8"	118/72	None	2	1-13	3:02-3:25	3:07-3:30	140-200	1-14	General peritonitis with acute gastritis.

In 47.5 per cent of all deaths the anesthetic was at least partly responsible (ethylene-ether was responsible for 18.9 per cent and ether was responsible for 28.5 per cent of the deaths). In 41.6 per cent of deaths following duodenal ulcer the anesthetic was at least partly responsible (ethylene-ether was responsible for 16.6 per cent and ether was responsible for 25 per cent of the deaths). In 62.5 per cent of deaths following cholecystic disease the anesthetic was at least partly responsible (ethylene-ether was responsible for 25 per cent and ether was responsible for 37.5 per cent of the deaths). Twenty-nine per cent of all patients that had bronchopneumonia died.

pneumonia occurred in 2.5 per cent. of the twelve hundred cases. Bronchitis occurred in 1.6 per cent. of the cases and postoperative cough in 3.6 per cent. The anesthetic was satisfactory in 84.1 per cent. of the cases. There was a surgical mortality of 1.7 per cent. There were nine deaths (seven tenths per cent. of the series) for which I considered the anesthetic partly responsible. I considered the anesthetic at least partly responsible for 42.8 per cent. of all the deaths.

COMPARATIVE RESULTS WITH REFERENCE TO PRELIMINARY MEDICATION (Table 2)

Operations for duodenal ulcer under ethylene-ether (280 cases).—In 55.8 per cent. of these cases no preliminary medication was employed. There was no postoperative bronchopneumonia among these cases, while it occurred in 4.7 per cent. of those cases in which morphine or morphine and atropine was employed. Satisfactory anesthesia was obtained in 80.1 per cent. of the cases in which preliminary medication was omitted, in eighty-six per cent. of those in which morphine only was given, and in 93.8 per cent. of those in which morphine and atropine was given. Death occurred in 1.2 per cent. of the cases in which no preliminary medication was used; I considered the anesthetic partly responsible in one instance. Death occurred in one (2.3 per cent.) of the cases in which morphine alone was given; I considered the anesthetic partly responsible in this case. Death occurred in 3.7 per cent. of the cases in which morphine and atropine was given; I did not consider the anesthetic responsible.

Operations for duodenal ulcer under ether (280 cases).—In 58.1 per cent. of these cases no preliminary medication was used. Bronchopneumonia appeared in three per cent. of these cases, in 9.8 per cent. of the cases in which morphine only was given, and in 4.7 per cent. of the cases in which morphine and atropine was given. In two cases atropine only was given and in neither was there any postoperative pulmonary complication. Satisfactory anesthesia was obtained in 83.5 per cent. of the cases in which there was no preliminary medication, in 80.3 per cent. of those in which morphine only was given, and in 88.8 per cent. of those in which morphine and atropine was given. Death occurred in three (1.8 per cent. of the cases in which no preliminary medication was used, and I considered the anesthetic partly responsible for death in one of them (33.3 per cent.). There were no deaths in the cases in which morphine only was given. Death occurred in three cases (4.7 per cent.) in which morphine and atropine had been given; I considered the anesthetic partly responsible for death in two of these.

Operations on gastric ulcer under ethylene-ether (33 cases).—No preliminary medication was used in eighteen (54.8 per cent.) of these cases; bronchopneumonia appeared in none of them, and anesthesia was satisfactory in 94.4 per cent. Satisfactory anesthesia was obtained in one hundred per cent. of the cases in which morphine was given, and in 91.7 per cent. of those in which morphine and atropine was given. There were no deaths following operation for gastric ulcer under ethylene-ether.

Operations on gastric ulcer under ether (33 cases).—No preliminary medication was used in twenty cases (60.6 per cent.) of this group; bronchopneumonia occurred in three cases (fifteen per cent.); bronchitis developed in five per cent., and postoperative cough was present in five per cent. Satisfactory anesthesia was obtained in eighty-five per cent. of the cases in which no preliminary medication was instituted. Death occurred in five per cent. of the cases and I did not consider the anesthetic even partly responsible. No postoperative pulmonary complications occurred in the cases in which morphine only had been given. In the cases in which morphine alone was given satisfactory anesthesia was obtained in 66.6 per cent. In the cases in which morphine and atropine was given no postoperative pulmonary complication occurred; satisfactory anesthesia was obtained in 85.7 per cent. and there were no deaths.

Operations on the gallbladder under ethylene-ether (287 cases).—No preliminary medication was used in 152 (52.9 per cent.) of the cases; among these bronchopneumonia developed in 1.3 per cent.; satisfactory anesthesia was obtained in 80.2 per cent., and death occurred in six tenths per cent.; but I did not consider the anesthetic responsible. Of the cases in which morphine only was given bronchopneumonia developed in 1.5 per cent.; satisfactory anesthesia was obtained in seventy-three per cent., and there were no deaths. Of the cases in which morphine and atropine was given bronchopneumonia appeared in 1.3 per cent.; satisfactory anesthesia was obtained in 79.1 per cent., and death occurred in 2.7 per cent. I considered the anesthetic partly responsible for death in one instance.

Operations on the gallbladder under ether (287 cases).—No preliminary medication was used in 220 cases (76.6 per cent.); among these bronchopneumonia appeared in 0.9 per cent. of the cases; satisfactory anesthesia was obtained in 89.5 per cent.; death occurred in three cases (1.3 per cent.) and I considered the anesthetic responsible in two of them. In the cases in which morphine was given bronchopneumonia developed in twelve per cent.; satisfactory anesthesia was obtained in eighty-four per cent., and death occurred in two cases (8 per cent.), in one of which I considered the anesthetic partly responsible. In the cases in which morphine and atropine was given bronchopneumonia appeared in 2.5 per cent.; satisfactory anesthesia was obtained in eighty-two per cent., and there were no deaths. In three cases atropine only was given; anesthesia was satisfactory in all of them and there were no deaths.

COMPARATIVE RESULTS WITH REFERENCE TO THE LESION ALONE (Table 3)

In cases of duodenal ulcer (560) bronchopneumonia appeared in 3.2 per cent.; satisfactory anesthesia was obtained in 84.5 per cent.; death occurred in 2.1 per cent., in 41.6 per cent. of which I considered the anesthetic partly responsible.

In cases of gastric ulcer (66) bronchopneumonia developed in 4.5 per cent.; satisfactory anesthesia was obtained in 87.8 per cent., and death occurred in 1.5 per cent.; I did not consider the anesthetic responsible.

In cholecystic disease (574 cases), bronchopneu-

monia occurred in 1.7 per cent.; satisfactory anesthesia was obtained in 83.2 per cent., and there was a mortality of 1.3 per cent. In fifty per cent. of the deaths I considered the anesthetic partly responsible. In 344 of the cases cholelithiasis was present; in these cases bronchopneumonia appeared in 1.7 per cent., and satisfactory anesthesia was obtained in 81.9 per cent.; the mortality was 1.7 per cent. In 66.6 per cent. of the six deaths I considered the anesthetic partly responsible. In 230 cases of cholecystitis without cholelithiasis bronchopneumonia appeared in 1.7 per cent.; satisfactory anesthesia was obtained in 85.2 per cent.; death occurred in 0.8 per cent.; I did not consider the anesthetic responsible.

SERIOUS PULMONARY COMPLICATIONS (Table 4)

Statistics based on the entire series.—In thirty-one of the twelve hundred cases, bronchopneumonia followed operation; ether was given in twenty-two (70.9 per cent.) and ethylene-ether was given in nine (twenty-nine per cent.); no preliminary medication was used in twelve cases (39.3 per cent.); morphine and atropine were used in nineteen cases (61.2 per cent.); satisfactory anesthesia was obtained in twenty-two cases (70.9 per cent.); death occurred in five cases (16.1 per cent). I considered the anesthetic partly responsible in four cases.

Pulmonary embolism appeared in three cases; in one the lesion was a duodenal ulcer and the anesthetic ethylene-ether; in the second the lesion was cholecystitis with cholelithiasis and the anesthetic ethylene-ether; in the third the lesion was cholecystitis with cholelithiasis and the anesthetic ether. Satisfactory anesthesia had been obtained in all three cases; no preliminary medication was used in one case; morphine only was used in two cases, and death occurred in one case; I did not consider the anesthetic responsible.

Statistics based on primary lesion.—Bronchopneumonia followed operation in eighteen cases of duodenal ulcer; no preliminary medication was used in five (27.7 per cent.); morphine or morphine and atropine was given in thirteen cases (72.2 per cent..); ethylene-ether was given in five (27.7 per cent.). and ether was given in thirteen (72.2 per cent.). Satisfactory anesthesia was obtained in fourteen (77.7 per cent.), and death occurred in two (11.1 per cent.); I considered the anesthetic partly responsible in each instance.

Bronchopneumonia followed operation for gastric ulcer in three cases; ether was given in all of them; no preliminary medication was used and none of the patients died.

Bronchopneumonia followed operation on the gallbladder in ten cases; ethylene and ether was given in four cases and ether in six cases; no preliminary medication was used in four cases, and morphine and atropine was given in six cases; satisfactory anesthesia was obtained in seven cases, and death occurred in three cases. I considered the anesthetic partly responsible in two.

MORTALITY (Table 5)

Death occurred in twenty-one (1.7 per cent.) of the twelve hundred cases. Most of the deaths occurred in three groups: Group 1 consists of five men and one woman operated on for duodenal ulcer under ether. The proportion of males to females is about what might be expected from the relative numbers in the original group of 280 cases. I considered the anesthetic at least partly responsible for the death of three of the patients. Group 2 consists of five men and one woman operated on for duodenal ulcer under ethylene-ether. I considered the anesthetic at least partly responsible for two of the deaths. Group 3 consists of four men and one woman operated on for cholecystitis with cholelithiasis under ether. I considered the anesthetic partly responsible for three of these deaths.

SUMMARY

The most favorable results in this series, from a viewpoint of anesthesia, postoperative pulmonary complications and mortality, were secured in the cases of gastric ulcer when ethylene-ether was used, and in the cases of cholecystitis without cholelithiasis when ether was given.

The best results, from the viewpoint of anesthesia and the incidence of postoperative pneumonia in duodenal ulcer, followed the preoperative administration of morphine and atropine and ethylene-ether anesthesia.

The net results, from a point of view of anesthesia, postoperative pulmonary complications and mortality, in cases of cholecystitis, whether or not there was an associated cholelithiasis, followed the use of ether without preliminary medication.

Anesthesia was satisfactory in eighty-five per cent. of cases on the average. The relative percentages in the ethylene-ether group and the ether group varied in the different operations. It must be borne in mind that the choice of anesthetic depended, to a varying degree, on the condition of the patient and the personal preferences of the surgeon. Other conditions besides the anesthetic, some of them doubtless unknown, affected the incidence of pulmonary complications and the mortality.

Since the percentage of ether required in the different operations varied so widely, it is impossible to draw general conclusions regarding the comparative value of the two types of anesthetic or the effect of the preoperative administration of hypnotics. What is proved in one type of operation is disproved in another. The absence of bronchopneumonia following operations in the large series of cases of duodenal ulcer (and the smaller series of cases of gastric ulcer) under ethylene-ether without preliminary medication, is no criterion (for the establishment of such a routine in upper abdominal surgery). Closer inspection of the figures for operations on gastric ulcer under ethylene-ether will show that bronchopneumonia did not follow in any case, regardless of the institution and type of preoperative medication. Preferences must be limited by the type of operation and no generalizations can be made. body.

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The Clinical Effects on the Gastrointestinal Tract Abnormalities of the Portal Circulation*

J. F. MONTAGUE, M.D., F.A.C.S.
New York, N. Y.

Abnormalities of the portal circulation originating as a result of anatomical deviations are so rarely observed that they may be dismissed with but mere mention of their possible occurrence. It also seems unnecessary to dwell upon the clinical effects of sudden portal thrombosis since the symptoms of that condition are so acutely manifest that it is rarely overlooked. Moreover, both of the foregoing abnormalities of the portal system are relatively well recognized and understood, the one by anatomists, the other by surgeons. There exist, however, a large and poorly defined group of clinical pictures which apparently have not yet advanced beyond the empiric stage of recognition, comprehension and symptomatic or placebo treatment. It is toward this group of conditions that I wish to draw your attention and submit for reflection a correlation of some of the abundant experimental and clinical materials available. The logical procedure in my discussion is admittedly sketchy and indeed the supporting data abbreviated to mere mention, yet this must necessarily be the case in consideration of the limits of time and the impropriety of giving here detailed data which can be easily reached in less crowded moments.

In order to more clearly comprehend deviations from the normal state of affairs I trust I will be permitted to recall to your mind the fact that the portal vein is the ultimate of a series of junctures of the various smaller veins which drain the venous blood from almost the whole of the abdominal and pelvic parts of the alimentary canal and its glandular accessories, the pancreas, liver and spleeen. Thus the portal system drains all the venous blood arising from the alimentary tract from the cardiac end of the stomach to the terminal portion of the rectum. Normally, therefore, there is a constant flow of blood from almost the entire gastrointestinal tract toward the right side of the heart through the radicals of the portal vein.

To come now to the deviations from normal portal circulation we find that the commonest abnormality is a functional one evidenced as a tendency toward obstruction. By this is meant an interference with the normal flow of blood from the gastrointestinal tract toward the right side of the heart. It will be noted that this obstruction is mentioned as a functional one rather than an anatomical one since in the instances I purpose to discuss there are but few permanent morphological changes involved. The abnormalities, therefore, are of function rather than of form, and it is perhaps for this reason that they have consistently escaped detailed notice and consideration at the autopsy table. The effect, however, is in many respects closely analogous to what would be produced by certain structural changes in the portal channels. An interference in the onward flow of venous blood in the portal channels naturally results in an increase in portal blood pressure since there occurs incident to and accompanying this, a true hemic plethora in the portal vessels. The superfluous blood volume entailed in such a plethora is distributed in an approximately uniform manner throughout the entire portal venous tree. In the majority of instances the causes at work are of such a nature as to make this portal plethora a fairly permanent condition. Such a state of permanent local plethora is, of course, one of chronic passive congestion, and it is this fact that I wish to emphasize.

All of the foregoing is, of course, a matter requiring no demonstration of proof at this point since it is widely accepted by students of pathological physiology. The best known clinical results of this

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state of affairs arise from the attempt on the part of nature to remedy the embarrassment of normal function produced. Thus an attempt at collateral circulation is made and at three points, i. e., via the esophageal veins, the abdominal veins and the hemorrhoidal veins. This readjustment is in many instances successfully accomplished and the patient then presents the classical symptoms of portal obstruction, i, e., esophageal varices, hemorrhoids and caput Medusæ. While from a didactic point of view the discovery of this condition in a patient is of value in teaching collateral circulation, yet it is scarcely a matter of justice to the patient to await the development of so complete a train of pathology. I am certain that no physician ever waits deliberately to see these symptoms arrive at a classical stage, yet by ignorance of the preclassical indications of approaching portal plethora as much injustice is wrought as if it were deliberate. It, therefore, should be our endeavor to perceive and if possible remedy this state of portal plethora long before it becomes a classical picture of obstruction. This in brief is the object of my discussion.

As has been stated, perhaps the best known result of portal obstruction is the production of hemorrhoids, yet it is an extremely narrow and erroneous view to assume that the production of hemorrhoids is the first chief or only result of this circulatory disorder. That this view should arise is probably explained by the fact that varicosities of the hemorrhoidal veins are exceedingly prone to traumatic injury and more so than similar varicosities elsewhere along the alimentary tract. Owing to at least a partial cerebrospinal sensory nervous supply they frequently give subjective evidence of their presence. Then, too, their ready accessibility to examination renders them more likely of discovery than other analogous lesions higher along the gastrointestinal tract. However, sight must not be lost of the fact that portal plethora exists in portions of the portal vascular tree other than the hemorrhoidal veins, and that its effect is felt on the entire portion of the gastrointestinal tract drained by this system. This effect, however, owing to the sympathetic sensory nervous supply gives far less subjective manifestation and is chiefly denoted, though vaguely, by the definite clinical symptom groups previously alluded to: i. e., as intestinal indigestion, flatulence, constipation, mucous colitis, and other conditions depending upon the portion affected.

I realize that the foregoing is a rather broad assertion as to the rôle that portal plethora plays in the production of the particular clinical conditions mentioned, and feel that a more detailed explanation of what I consider the mechanism of their genesis, should be stated.

The first and most obvious effect of portal plethora is the mechanical distension of the veins and venules which proceeds in many instances to a point where the limit of elasticity is exceeded in the venules and varicosities develop, or in less fortunate cases actual rupture of these structures occurs and is noted clinically as hematemesis, melena, and bleeding hemorrhoids. Aside from this effect, the mechanical distension of the venules limits to no small degree the motility of the stomach and intestines, thereby favoring stasis of the intestinal content. One other effect noted which is to a large degree mechanically produced, is the enlargement of the liver and spleen by the increased blood volume.

More important, however, and decidedly less obvious than the mechanical feature of increased blood volume incident to plethora, is the decided alteration in the chemical qualities of the blood. That this fact is of utmost importance must be evident when we realize that the viscera under consideration, i. e., stomach, intestines, pancreas, liver and spleen, are essentially glandular structures. While it is true that they have other functions, I believe it will be admitted in view of the myriad of glands present that at least the stomach and intestines are predominantly glandular in nature. They have for their function the manufacture of various digestive ferments. This is an extremely delicate physiological process and one which requires for functional efficiency the best possible circulatory support. In portal plethora we have a marked anoxemia, i. e., a condition of insufficient aeration of the blood. The waste products, notably carbon dioxide, are relatively increased, and the restorative elements, notably oxygen, are considerably decreased. Hence it is apparent that when a state of chronic passive congestion such as is present in portal plethora exists, there naturally follows a widespread and serious disturbance in glandular function. Since the processes of digestion are intimately dependent upon the enzymes that these glands elaborate any diminution or alteration in the character of the enzymes is certain to be followed by maldigestion if not actual indigestion. Any marked decrease in digestive function is certain to cause a corresponding increase in that type of digestion termed by physiologists as supplementary digestion. By this is meant the fermentative and putrefactive processes normally affected by the bacterial inhabitants of the intestine in the foodstuffs modified by the digestive secretions. If by the term "intestinal indigestion" we imply the above described process then our term is quite correct, though I fear that such a train of reasoning is not always employed before allotting that diagnosis. It is my opinion that many cases of socalled flatulence are to a great degree explainable upon the basis of these factors.

As to the rôle that portal plethora plays in the production of "constipation" I call attention to the fact that physiologists today attach much importance to the influence of the rhythmic contractions of the intestinal musculature in driving both the venous blood and lymph through the portal channels toward the right side of the heart. Inasmuch as a condition of anemia induces a relaxation of muscular tissue it can be readily seen that a vicious circle is established in which the relaxation of the intestinal muscle tissue increases the plethora which in turn induces further relaxation. With such a state of affairs it is little to be wondered at that constipation and distension occurs. If an additional factor were needed to prove the potency of portal plethora in producing these conditions it could easily be found in the nervous disturbances which ensue upon any such disorder of circulation. It seems highly probable that the function of the plexuses of Meissner and Auerbach are disturbed not only by the mechanical distention

involved but also by the abnormal chemical qualities of the blood. Owing to the delicacy of nervous tissue such effects are chiefly early and rapid responses which are supplemented in a short time by the more lasting glandular disturbances already noted. However, the physiological theories of the nerve regulation of intestinal movements are still so indefinite and fragmentary that their further mention here would cloud rather than clear the issue.

To this point we have noted principally the effects of these deviations in normal portal circulation upon the structures of the alimentary tract, but it must be selfevident that these same conditions also have an effect similar in nature upon those glandular accessory structure of the alimentary tract that share with the stomach and intestines blood supply from the same source, namely, the portal system.

As to the clinical effects of portal plethora upon the spleen, little is known other than that an enlarged spleen arises from the congestion involved. This is chiefly produced mechanically by the increased blood volume in the tributaries of the splenic vein, and because of the locally increased venous blood pressure. Since the spleen has long been and still is an enigma to physiologists, it is difficult to more than conjecture what the effects of disturbance in its not too well defined functions are. It is, however, generally agreed upon that the digestive power of the gastric juice is to some extent dependent upon the functional efficiency of the spleen. Since chronic passive congestion of the spleen interferes with this efficiency, it naturally follows that one of the contributory factors to indigestion occurring in portal plethora is this functional impairment of the spleen. That this organ has some function relative to blood formation and more particularly to blood cell destruction, has been definitely established. In view of the uncertainty of its exact function, it is perhaps unwise to hazard a surmise as to the clinical effects portal plethora has on this function, yet it seems not unreasonable to suppose that the cause of some of our hemic disorders, particularly polycythemia, might be found in portal plethora.

The pancreas is also profoundly affected by chemical and mechanical abnormalities incident to portal plethora and in a manner similar to that outlined previously in respect to the other digestive glands its function is impaired. The clinical observation corresponding to such an impairment is partly a socalled intestinal indigestion and partly various alterations in the fecal content incident to this:—as such may be mentioned steatorrhea or fatty diarrhea.

The effect on the liver is fairly well known as the nutmeg liver of chronic passive congestion is by no means a post mortem rarity. The disturbances in function which this condition causes in life, are dependent upon the functions of the liver, and these too are but incompletely known. Certainly a most natural result are disturbances in biliary secretion with attendant effect on digestive processes.

Thus far we have touched upon the mechanical and chemical features of portal plethora in so far as they affect the circulation of blood. There is, however, another factor besides the simple matter of disturbance in hemic circulatory function. One cannot have a chronic passive congestion without disturbing to a very serious extent the lymphatic circulation and this is, of course, a considerable factor when the intestines are concerned. That the alimentary mucosa is one vast absorptive area is apparent upon a little reflection. The physiological result is not only a local increase in the amount of lymph, but the marked increase in the mucin producing powers of the various glandular structures, particularly throughout the large intestine. This hyperactivity of mucin producing glands, combined with a certain amount of lymphatic transudation into the bowel incident to decreased absorptive powers, combine to produce an abnormal amount of mucus, and this is noted and known clinically as mucus colitis, or later, when the discharge is more largely pure transudate, as one of the diarrheas of unknown etiology.

To this point we have been speaking of complete portal plethora, since, indeed, it is the commonest form. The reason for this may be readily appreciated when we recognize that by this discussion we view at a glance what any partial effects may be. Thus, if obstruction originates by reason of disorder of the right side of the heart all of the various structures along the portal channel distal to this point will be affected in a varying degree, dependent upon the efficiency with which collateral circulation is established. If, however, obstruction is of a more limited nature, such for instance as is produced by the pressure of a pregnant uterus upon the inferior mesenteric veins, naturally the chief effects noted are limited to the area supplied by those branches.

This brings us to the matter of specific causative factors, and an analysis of these and their relation to the train of events hitherto described, serves the double purpose of stating them and of putting to a practical test the accuracy of observations made.

Beginning with the keystone, we find that the condition which is most extensive in its effects is that in which the return of blood through the portal system is impeded by back pressure resulting from chronic valvular disease of the heart. These effects are not only noted in tricuspid regurgitation which is only occasional but more frequently in that relative insufficiency often secondary to lesions of the valves on the left side, particularly the mitral. Thus Osler says, "in some cases of mitral disease, stenosis and insufficiency may reach the stage where all the symptoms are due to secondary changes in the liver." Moreover, in cardiac insufficiency the leading symptoms are "anorexia, indigestion, flatulence, constipation, diarrhea, abdominal pain, and hemorrhoids."

Not only in chronic valvular disease of the heart but in every condition leading to venous stasis in the right heart, the effect is felt in the veins of the portal system. Thus in emphysema, cirrhosis of the lung, and in instances where intrathoracic tumors are present, mechanical congestion occurs, "gastrointestinal catarrh is usually present, and hematemesis may occur. Ascites, slight jaundice, and clay colored stools may also occur." I am of the opinion that the tympanites not infrequently observed in lobar pneumonia is also the result of its potency in disturbing normal portal circulation. In passing we might note Osler's comment, "in certain forms of heart disease in chronic emphysema of the lungs, we may have a

polycytemia or erythema of from seven to thirteen millions red blood cells, and this is accompanied by constipation, hemorrhages from the mucous membranes and an enlarged spleen."

To come lower in the portal venous tree, we find that in cirrhosis of the liver, syphilis of the liver or where the radicals of the portal veins have been invaded by cancer "the patient may first come under consideration for dyspepsia, hematemesis, or slight jaundice." "Later there is to be noted chronic gastric catarrh, irregularity in bowel function, occasionally gastric hemorrhage, and frequently melena, while the spleen is usully enlarged enough to be distinctly palpable."

When we come to the individual branches of the portal vein, we find that symptoms of partial obstruction and local venous plethora may occur as the result of the mechanical extrinsic pressure of a tumor, such as fibroids, an ovarian cyst, or even the pregnant uterus upon certain of these veins. Adhesions may act in a similar manner. Thrombosis or adhesive pylephlebitis is the usual intrinsic cause of partial obstruction. The effects of such obstruction are, of course, more limited than a similar obstruction occurring higher in the vascular tree, and are moreover more capable of being eventually remedied through the agency of collateral circulation.

CONCLUSIONS

I believe the foregoing justifies the following general conclusions:

1. Hemorrhoids are neither the first, chief nor only effect of portal plethora.

2. Plethora in the portal system exerts its effects over the entire portal venous tree. These effects are: a, mechanical upon the blood circulation inducing distention or rupture of the venules, visceral enlargements and a tendency to limit intestinal motility. b, Mechanical upon lymphatic circulation inducing the transudation of unabsorbed lymph and decreased absorptive power of the intestinal mucosa. c, Chemical upon both blood and lymph, causing alteration in the character of glandular secretion and exerting a depressor effect on muscle tissue with corresponding adverse effects on intestinal motility.

3. By virtue of the mechanical and chemical effects noted portal plethora is exceedingly influential in the pathogenesis of clinically vague gastrointestinal disorders such as intestinal indigestion, constipation, flatulence, mucous colitis and diarrheas of unknown etiology.

4. The injustice of a blanket diagnosis should not be made in the instance of such disorders until they are carefully analyzed to exclude the presence of the factor of portal plethora.

A Statistical Study of the Diagnostic Value of Anacidity*

HOWARD R. HARTMAN, M.D.
and WILLIAM W. SAGER, M.D.
Rochester, Minn.

The present study was undertaken with the purpose of studying the diagnostic value of anacidity. Much work has been done since 1879 when van der Velden in Russmaul's Clinic discovered that there is no free hydrochloric acid in the gastric contents of patients suffering from carcinoma of the stomach. The purpose of this early work was to find the percentage of cases in various diseases showing anacidity. We have approached the problem in another way. In selecting the cases for analysis, anacidity was the only factor considered, and we noted the relative frequency of occurrence of various diseases. It is apparent, on a little consideration, that a statistical study made in this manner will give different percentages for different diseases, from one in which the method of study has been the determination of the frequency of occurrence of anacidity in each disease. The percentages worked out in this manner should be almost as accurate as the finding of anacidity in gastric analysis.

Four hundred ninety-two cases of anacidity were collected, in which the method of gastric analysis was the fractional method of Rehfuss. A small percentage only were checked by repeating the analysis. In a study of this nature, however, this will have but little relative effect, as all will be affected alike (with one exception which will be discussed later), and the percentage error in each group would be about the same. Some difficulty arose from the fact that in many cases there were several diagnoses. In such instances, with the exception of malignant conditions, gallbladder disease and pernicious anemia, the case was placed under the diagnosis which explained the symptoms for which the patient came to the clinic (Table 1).

TABLE 1

VARIOUS DISEASES IN 492 CASES OF ANACIDITY

Diagnosis	*Cases*
Carcinoma of the stomach	93
Questionable carcinoma of the stomach	3
Malignant tumors (extragastrict)	8
Cholecystitis	89
Neurosis	87
Pernicious anemia	57
Secondary anemia	12
Anacidity alone	49
Peptic ulcer	13
Goiter	9
Hypertrophic arthritis	7
Syphilis (four cases of gastric syphilis)	6
Questionable syphilis	1
Entamebiasis (Entameba histolytica)	5
Cardiac diseases	5
Hypertension	5
Tuberculosis	5
Cirrhosis of the liver	3
Appendicitis	4

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Diagnosis	*Cases*
Empyema	2
Cardiospasm	2
Hypertrophy of the prostate	2
Lymphatic leukemia	1
Duodenitis	1
Procidentia of uterus	1
Pneumonoconiosis	1
Cervical polyp	1
Ulcerative colitis	1
Neuromuscular pain	1
Diabetes mellitus	1
Chronic nephritis	1
Toxic pruritis	1
Hay fever	1
Chronic catarrhal gastritis	1
Chronic mastitis	1
Postinfluenzal debility	1
Bilateral polycystic kidneys	1
Diarrhea (Balantidium coli)	1
Nicotinism	1
Sclerosis of the central nervous system	1
Indeterminate	7

Table 1 suggests the wide distribution of anacidity. It is probable that anacidity was incidental and bore no relationship to the patient's disease except when it was associated with the same disease more than once. However, as the primary cause of anacidity is not known no disease can be excluded.

Carcinoma of the stomach was more frequently associated than any other disease. Of the ninety-six cases, three of which were questionable, sixty-four were inoperable. There were eight cases of malignant disease in other parts of the body: epithelioma of the bladder, carcinoma of the pancreas, carcinoma of the gallbladder and liver, carcinoma of the thyroid, hypernephroma, melanoepithelioma of the foot, epithelioma of the lower eyelid, and Hodgkin's disease, one case each. There is a 20.53 per cent. chance of malignancy in a case of anacidity, an 18.11 per cent. chance of malignant disease of the stomach, and a thirteen per cent. chance of the carcinoma of the stomach being inoperable. It is found, on close analysis of the figures, that 105 cases of anacidity occurred before the patients were forty years of age. This raises the percentage chance after forty to twenty-three for malignant disease of the stomach and twenty-six per cent. for malignant disease of some other part of the body. The chance of malignancy in patients under forty in this series is 4:105. The site of the malignant growths of the stomach was not investigated, as one of us (Hartman), in a study of 551 cases of carcinoma of the stomach, found that situation influenced the percentage of anacidity very little. Anacidity was found in about half of his cases.

For the purpose of comparison 420 cases were studied in which the free hydrochloric acid varied from four to twenty. In this series seventeen cases of malignant disease were found. Twelve were carcinoma of the stomach. The remaining five were: multiple, malignant lesions of the abdomen, carcinoma of the umbilicus, carcinoma of the esophagus, carcinoma of the transverse colon, and abdominal carcinomatosis. In other words, carcinoma of the stomach occurs in 3.1 per cent. of the cases in the presence of small quantities of free hydrochloric acid.

Eighty-nine of the 492 cases of anacidity were associated with cholecystitis (18.11 per cent.). Hurst and others believe that there is a direct relationship between anacidity and disease of the gallbladder and appendix. The difficulty, as pointed out by Bennett, is to determine which appears first: appendicitis, cholecystitis, or anacidity. In eleven of the eighty-nine cases there were stones, in one there was empyema of the gallbladder, and in one the diagnosis was questionable.

Eighty-seven were cases of various functional nervous diseases, in forty of which no organic abnormality was noted other than the absence of free hydrochloric acid. In each of the eighty-seven cases the nervous condition explained the symptoms. The question of the value of repeated gastric analysis arises here, and there is no doubt that the gastric contents of a small percentage of these patients would have shown free acid on repeated analysis, as it is well known that complete suppression of hydrochloric acid may be caused by some nervous influence, such as fear of the introduction of a stomach tube, migraine, or headache at the time of intubation.

Pernicious anemia was found in fifty-seven cases (11.57 per cent.). Faber pointed out that anacidity may precede the other symptoms of this disease. He noted anacidity ten, eight, and four years before death from pernicious anemia. This should be given consideration in evaluating anacidity. Hurst attributes the anemia to an intestinal infection resulting from lack of hydrochloric acid in the stomach to sterilize the contents before they enter the intestine.

Forty-nine cases were found in which the only pathological condition noted was absence of hydrochloric acid.

Only four cases of appendicitis were noted, but the total number of cases of frank appendicitis treated at the clinic is relatively small.

Thirteen cases of peptic ulcer were found. Of this group four were questionable and in two gastroenterostomy had been performed.

The seven cases of syphilis included one in which the diagnosis was questionable. Four were definitely proved to be cases of gastric syphilis.

It would prolong this paper unduly to discuss any of the remaining cases. The diagnoses in these cases were exact, and the table gives the detailed information.

CONCLUSIONS

1. The chances for and against the presence of pernicious anemia, gallbladder disease, or carcinoma, in a case of anacidity, are about even; the chances of either pernicious anemia or carcinoma being present are about one in three.

2. Carcinoma is rare when free hydrochloric acid is present.

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The Incidence and Prognosis of Hemorrhage as a Complication of Gastroduodenal Ulcer*

SYLVAN D. MANHEIM, M.D.
New York

The incidence of hemorrhage as a complication of gastroduodenal ulcer varies considerably in medical statistical literature. Most of the figures quoted are based on a study of ward or hospital cases, omitting the vast number of ambulatory ulcer cases treated in the clinic or office. It must, therefore, be remembered that any quoted statistics are usually based on the study of the more serious and restricted group of cases coming to the wards of a hospital for treatment.

By hemorrhage is meant gross bleeding, such as the vomiting of bright or dark red blood or the passage of numerous black tarry stools, together with the clinical signs of bleeding as weakness, pallor, rapid pulse, etc.

The actual frequency of hemorrhage in gastric and duodenal ulcer can hardly be stated with a more than a fair degree of accuracy. Paterson stated that hemorrhage occurred in at least two thirds of all ulcer cases and that it was severe or recurrent in thirty per cent. of them. Osler quotes statistics of the University College Hospital, where the percentage was eighty-four and from the Royal Victoria Hospital where it was sixty per cent. These figures probably include cases with occult bleeding. More recent combined statistics from various sources place the incidence of gross hemorrhage at about twenty-five per cent. Thus, the report of Eggleston, in a study of five hundred cases of ulcer, states that copious hemorrhage occurred in nineteen per cent. W. J. Mayo reports hemorrhage as having occurred in seventeen per cent. of gastric ulcer cases and fifteen per cent. of duodenal ulcer cases.

BASIS OF STUDY

The following report is based on a study of 426 cases of gastroduodenal ulcer treated on the medical wards of Mount Sinai Hospital between the years 1915 and 1925 inclusive. The cases were selected ones, taking only those in which either the x ray findings were positive for ulcer or the clinical diagnosis at least fairly certain.

The incidence of hemorrhage in the duodenal group was forty-eight out of 246, or 19.5 per cent. In the gastric group it was fifty-three out of 180 or 29.5 per cent. Of the entire series the incidence of hemorrhage was 23.7 per cent.

Bleeding from ulcer may occur at any age, but is most common between the ages of thirty to forty years. In this decade there were thirty-one cases of hemorrhage of which fifteen were duodenal and sixteen gastric (Table No. 1).

In this study the incidence of ulcer was found to be far greater in men than in women. We found gastroduodenal ulcer in 361 males and in sixty-five females—a proportion of five to one. However, we see that though ulcer is far more common in men than in women, the incidence of hemorrhage is by far greater in the women (Table 2).

TABLE 1

DUODENAL ULCER

Age	*Total Cases*	*Hemorrhage*
10-20	6	2
20-30	60	12
30-40	81	15
40-50	55	8
Over 50	44	11

GASTRIC ULCER

Age	*Total Cases*	*Hemorrhage*
10-20	4	6
20-30	33	8
30-40	52	16
40-50	40	11
Over 50	51	12

Thus, in the duodenal group, hemorrhage in the female was 2.3 times more common than in the male, while in the gastric group hemorrhage was only 1.8 times more frequent in the female than in the male.

As regards occupation, it is unlikely that business or occupation plays any rôle. Trauma has been described as a causative factor in gastric hemorrhage. It is undoubtedly an important one. A blow or fall on the abdomen may cause a severe hemorrhage. Eusterman in a recent article recounts from his experience several varieties of trauma or violent exercise which caused hemorrhage from ulcer.

TABLE 2

DUODENAL ULCER

Age	*Males*	*Hemorrhage*	*Females*	*Hemorrhage*
10-20	5	1	1	1
20-30	50	12	10	1
30-40	76	12	5	1
40-50	51	6	4	4
Over 50.	41	8	3	2
Total	223	39—17 per cent.	23	9—39 per cent.

GASTRIC ULCER

Age	*Males*	*Hemorrhage*	*Females*	*Hemorrhage*
10-20	2	2	2	2
20-30	20	4	13	4
30-40	42	10	10	7
40-50	31	7	9	4
Over 50.	43	11	8	2
Total	138	34—24 per cent.	42	19—45 per cent.

Hemorrhage may also occur in the course of an ulcer without any previous exertion. We may see hemorrhage as occurring frequently as the first symptom of an ulcer. A large number of these cases had numerous tarry stools as their first indication of any gastroduodenal disease.

Symptoms.—The hemoglobin reading as a prognostic sign is not a very satisfactory one. An accurate chart of the daily blood pressure readings gives far more information as to the progressive changes taking place within the vascular system. The change in hemoglobin denotes a qualitative difference in the dilution of the blood, while the blood pressure is an

*From the Medical Service, The Mount Sinai Hospital, New York. Read before The Clinical Conference of the Mount Sinai Hospital, March, 1926.

indication as to the quantitative change in blood volume. The hemoglobin drops slowly, but progressively, for several days. The lowest drop noted in our series was to twenty per cent. hemoglobin. The average hemoglobin reading was thirty-five per cent. (Sahli) and even at this figure the patients were fairly comfortable. The low point of the hemoglobin is usually reached on the fourth or fifth day after the hemorrhage.

Not so with the blood pressure. With the occurrence of hemorrhage there is a quick and continuous drop in blood pressure until the bleeding ceases. The blood pressure may fall very low, and in one case the systolic pressure was registered as low as 55, the patient remaining fairly comfortable. As a guide to the extent and cessation of the hemorrhage, the blood pressure is a more delicate test than the fall in hemoglobin. When the bleeding has ceased the blood pressure shows a gradual and steady rise, while the hemoglobin falls or remains low for several days (chart).

Prognosis.—The prognosis as to life in gastric and duodenal hemorrhage is good. Contrary to many preconceived notions, patients rarely die of hemorrhage. Nielsen in a careful and systematic followup study of ulcer cases, reports one death in 182 cases followed for from two to nineteen years; while Eggleston reports one case of fatal hemorrhage from bleeding ulcer in a series of cases covering twenty years. Paterson quotes four series totalling 1243 cases with a mortality of 3.8 per cent.; while Hurst reports six hundred cases from Guy's Hospital with a mortality of 2.5 per cent.

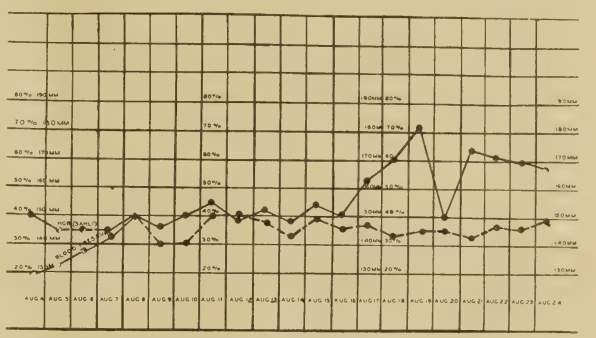
In this series of 426 gastric and duodenal ulcer cases from the medical wards of Mt. Sinai Hospital 101 patients had severe hemorrhage. Seven of these cases (in the early years) were transferred to the surgical side for immediate operation; five of these seven died. The remaining ninety-four were treated medically. In this latter group there were four deaths, proven at autopsy to be peptic ulcer cases. This is a mortality rate of 4.2 per cent. of the bleeding cases. Omitting the seven cases transferred to the surgical wards, we have four deaths out of 419 ulcer patients treated medically; a mortality rate of 0.9 per cent. of the total ulcer group. These figures agree with other statistics; thus Bevan reports ninety-five per cent. recovery from hemorrhage and Payr reports ninety-seven per cent. surviving under medical treatment.

What does the surgical treatment of hemorrhage offer? Surgeons today are agreed that the bleeding ulcer patient with his acute anemia and more or less collapse, is at the time of the hemorrhage not a desirable surgical risk. The surgical mortality rate in these cases is extremely high. Surgical treatment, if instituted at all, should not be carried out until one month or more has passed since the hemorrhage.

Shall the patient with chronic recurring hemorrhages be operated upon? In this series of cases none of those with repeated hemorrhages died. The fatal cases all occurred as a result of the initial brisk hemorrhage. These are cases of profuse hemorrhage, with rapid and fatal termination, before medical or surgical treatment could have checked its course.

Does gastroenterostomy protect the patient with a chronic condition from a recurrence of the hemorrhage? Balfour noted that hemorrhage occurred after operation (gastroenterostomy) in thirteen per cent. of cases with a history of previous hemorrhage, and in 0.9 per cent. of gastroenterostomy cases without a previous record of hemorrhage. Eusterman reports a recurrence of hemorrhage in twenty-five per cent. of cases following operation; while Eggleston reports a recurrence in eleven per cent. In this series eight patients had a recurrence of hemorrhage in from two to eight years following a gastroenterostomy. Gastroenterostomy then, is not the operation of choice. Excision of the ulcer, with its persistence of the presence of free hydrochloric acid, leaves the patient open to a recurrence of the ulcer. Subtotal gastrectomy then, is the only logical operation, though the mortality rate is higher than for the type operations previously mentioned.

I do not mean to convey the impression that an



HEMOGLOBLIN & BLOOD PRESSURE

ulcer case that has bled should never be operated upon. Under certain conditions such as chronic progressing anemia from repeated hemorrhages, persistent pain or pyloric obstruction, surgical intervention is absolutely necessary. I do maintain, however, that hemorrhage alone, or the fear of a future hemorrhage, with no other alarming or incapacitating symptoms, is not an indication for surgical intervention.

Medical treatment offers, in my opinion, the safest and most promising results. We must, for the present, be resigned to the initial loss of a certain number of bleeding cases and should consider ourselves fortunate in being able to keep the mortality rate as low as it is with medical treatment.

As part of our general followup of ulcer cases, we have paid special attention to the remote effects of hemorrhage upon the life history and ultimate fate of ulcer cases subject to this complication. Of the ninety-four cases of bleeding ulcer, we are able to report on the end results in thirty-six patients. Most of them have been followed for from one to four years and some for periods up to nine years; five had had multiple hemorrhages before coming under treatment and observation.

Of the thirty-six cases followed: nineteen or fifty-three per cent. have remained well since their stay in the hospital. Seventeen or forty-seven per cent. have had recurrences of symptoms. Of the seventeen cases with recurrent symptoms: five are still under medical treatment. Four have had recurrent hemorrhages. Eight have been operated upon. Of the eight patients operated upon: six are well. One had recurrent postoperative hemorrhages. One has a recurrence of symptoms.

There were no deaths in the cases of recurrent hemorrhages which occurred during the years of followup observation. This is a most important point. It corrects the impression, rather current, that a gross hemorrhage is likely to be followed in subsequent years, by later more severe and probably fatal exsanguination. Our own conclusion therefore agrees quite in detail with that of Nielsen, who, in a far larger series and more prolonged followup, also came to the conclusion that recurrent hemorrhages that end fatally are extremely uncommon. A strong argument for the operative treatment of bleeding cases is thus unseated.

In fact, we noted recurrence of hemorrhage in only four cases out of thirty-six cases followed for these years. This is an incidence of only 11.1 per cent., a figure which is lower even than the incidence of hemorrhage in ulcer cases in general. It would thus appear that, contrary to all expectation, a case that has once had a severe hemorrhage is relatively less likely to a recurrence than are ulcer cases as a group.

One of the patients of the thirty-six cases of hemorrhage was subsequently operated for acute perforation. This is an incidence of less than three per cent., which again is approximately that of perforation of ulcer in general. It would therefore seem incorrect to conclude that hemorrhage predisposed in any way to subsequent perforation.

Again, we note that the percentage of cure in ulcer cases that have bled is almost as good as in ulcer cases as a general group. In our own published followup series (Einhorn and Crohn), of a group of general gastroduodenal ulcers observed for one to four years, we reported sixty per cent. as cured. This figure agrees well with the curability of ulcers after hemorrhage, the slight difference between sixty per cent. for general ulcer cases and fifty-three per cent. for the hemorrhage group, being inconsiderable.

Although one should realize that a followup study of gastroduodenal hemorrhage should be based on very large groups of cases; nevertheless we feel justified in coming to the following conclusions:

1. The incidence of severe hemorrhage from gastroduodenal ulcer is about twenty-five per cent.

2. The mortality rate from hemorrhage is about four per cent. of the bleeding cases and approximately one per cent. of ulcer cases in general.

3. Surgical treatment of gastroduodenal hemorrhage cases does not lower the mortality rate.

4. Hemorrhage does not seem materially to alter the life course of an ulcer.

5. The percentage of cures in hemorrhage cases is about the same as in ulcer cases as a group.

6. The remote danger from hemorrhage has been overstated. The argument that one hemorrhage may at any time be followed by another and possibly fatal exsanguination is not confirmed by the facts of this followup.

7. The likelihood of perforation is no greater in bleeding cases than in ulcers as a general group.

473 West End Avenue.

Gallstones*

EDWARD L. KELLOGG, M.D., F.A.C.S.

New York

The purpose of this paper is to review the subject of cholelithiasis, to consider the complications and to discuss the management of the disease.

The earliest note of concretions in the liver occurs in the writings of a Greek physician, Alexander Trallianus, whose book, after having been lost for upwards of a thousand years, was found by Stephanus and published in Paris in 1548. He refers to "dried up humors, concreted like stones," and considers them a possible cause of obstruction in the liver.

About 900 A. D. Rhazes, an Arabian, described the stones found in the "gall of the ox, which philosophers call Alcheron," stating that if the substance is ground and drawn into the nostrils, it will promote sharpness of the eye: and in 1602 Gesner recommended it for epilepsy.

Gallstones in the human subject were first described by Benivenius, of Florence, in 1400 A.D. He cites the following case: "A certain noble lady had been suffering for a long time from pain in the liver region and, although she had consulted many physicians, she had not been able to get rid of her malady. For this reason she was pleased to try our aid, together with others.

We met several physicians and discussed at great length what might be the hidden cause of the disease. As happens frequently in doubtful matters, we could not agree, for some supposed an abscess of the liver, others a degeneration of that organ. We, ourselves, believed that the fault was with the covering membrane.

When she, after a few days, during which the illness increased upon her, had departed this life, as we had from certain signs foretold, we procured the opening of the body and there were found small stones differing in shape and color, which had collected in the lower part of the membrane of the liver. Some were round, others angular or quadratic, as position and accident had affected them. Some had red spots, others were distinguished by blue and white ones. By their weight, they had formed of the covering of the liver a small sac, of the length of the hollow of the hand, and of the width of two fingers.

As we believed these to be the cause of death, we judged it vain and useless to dispute on obscure matters."

In 1609 Schenkius gives a grotesque description of the effect of gallstones: "Horrible and stupendous calculi coagulate in the gallbladder, their shape, color, number and wonderful effects producing vomiting, nausea, heaviness, low spirits, tearings of the stomach and hypochondrium, atrophy, tabes, obstruction of the viscera, inflammation, incurable jaundice, sleeplessness, lassitude, sadness, melancholic affections, inclin-

ation to anger, difficulty and heat of urine, lepra of skin, fever, sudden death by a hidden and generally unknown seminary and foment of diseases and symptoms."

In *modern* times, the names of Thudicum (1863) and Naunyn (1896) are connected with the pathology and treatment of the disease.

The surgery was developed largely by Courvoisier in France, Kehr and Langenbeck in Germany, Kocher in Switzerland, and J. Marion Sims in the United States, although in 1618 Fabricus Hildanus performed the first operation for removal of gallstones and in 1743 Petit deliberately carried out the procedure in cases in which the gallbladder was adherent to the abdominal wall. In 1867, Bobbs, an American surgeon, performed cholecystotomy in one stage, and in 1882, Langenbeck did the first cholecystectomy.

The importance of this subject is shown by the statistics of gallstones in seven to ten per cent. of all autopsies and in twenty-five per cent. of persons over sixty years of age.

It is much more frequent in women than men and ten times more common in those who have borne children than in those who are sterile. It is comparatively uncommon in people under thirty but is not a negligible factor in the diseases of early life.

In 1923, the writer reported sixty-three cases of gallbladder disease, collected from the literature, all under fifteen years of age, adding that of a child, aged twelve. Several were among very young children or newborn infants and one was an eight months fœtus.

It is not practicable to separate the consideration of gallstones and cholecystitis, for with the exception of the rare cholesterin calculus, infection always occurs.

The calculi met with in sixty per cent. of the cases are a mixture of cholesterin and bilirubin calcium. The presence of other varieties does not alter the problem.

The specific etiological factors are stagnation of bile, infection, catarrhal inflammation, a deposit of cholestrin and bilirubin calcium.

Biliary stasis is favored by sedentary habits, obesity, infrequent meals, constipation, pressure, adhesions, enteroptosis and pregnancy.

Chronic cholecystis may follow typhoid, chronic infection of the colon, teeth or tonsils. Although streptococci, bacillus coli and the typhoid bacilli are commonly reported, other bacteria are found with sufficient frequency to indicate that the variety of infection is not important. It is essential, however, that its activity be sufficiently attenuated to render it incapable of maintaining an acute inflammation. The bacteria usually reach the gallbladder by way of the blood or lymphatics, first involving the deep layers, rather than the mucosa, and possibly explaining the relative sterility of the bile, although it is known that the concentration of the gallbladder bile discourages the growth of bacteria. (Drennen reports nineteen per cent. of bile infections in one hundred cholecystectomies.)

This offers an argument in favor of cholecystectomy rather than cholecystostomy.

Naunyn taught that the cholesterin content of the bile is constant but McNeer has shown that it varies with the amount in the blood, justifying, in a measure, the discredited theory of cholesterinemia advanced by the elder Austin Flint. But as gallstone patients do not all show hypercholesterinemia, Naunyn's explanation must be accepted, that cholesterin is derived from the mucous membrane of the bile passages, since it is always present in secretions from diseased mucous membranes, in pus and in degenerated epithelial cells.

He admits that a stone, once formed, may grow by crystallization of cholesterin from the bile. Apparently, therefore, both processes are at work. The hypercholesterinemia, normally occurring in pregnancy, explains the predisposition of the parturient woman to gallstones.

The mucus secreted causes the combination and precipitation of bilirubin calcium, which acts as a cement substance.

"The pathological anatomy of cholelithiasis forms the foundation for its diagnosis and treatment" (Kehr).

Stones may remain quiescent in the gallbladder, or cause a recognizable cholecystitis, possibly progressing to acute inflammation empyema or gangrene. The gallbladder may dilate or contract, pericholecystic adhesions form, or perforation occur—suddenly with peritonitis, or gradually with the formation of external or internal fistulæ. (Naunyn collected 384 cases of biliary fistulæ, of which 108 communicated with the duodenum, 184 with the abdominal wall and fifty with the colon. Occasional communication was found with the stomach, urinary tract and thoracic organs.)

The cystic duct frequently becomes obstructed. In the common duct, a stone may cause obstruction with jaundice and cholangitis. Impacted in the ampulla of Vater, it often leads to pancreatitis. Entering the intestines by way of the common duct or fistulous opening, it occasionally causes obstruction.

Complications develop in the stomach and intestines and the absorption of inflammatory products results in arthritis, neuralgia and migraine. Malignancy occasionally terminates the disease. Kehr states that only five per cent. of persons with gallstones have symptoms. Moynahan maintains that, with the exception of the rare cholesterin calculus, symptoms are always present, but may not be recognized. Weile (1) groups the cases as gastrointestinal, hepatic, migraine and masked. Schneider (2) reconstructs the life history of the disease into decades. During the first and second, the development of cholecystitis may be noted, followed by toxic symptoms. During the third and fourth, digestive symptoms become more marked. From the fourth to the eighth decades, advancing local changes and complications are expected. At any time, a stone may attempt to migrate, inaugurating an attack of colic.

Typhoid fever, pneumonia or acute appendicitis frequently precedes the onset of the disease.

The early symptoms are usually obstinate dyspepsia, heartburn, fullness, weight, distention, partially relieved by belching or vomiting and increased by greasy foods with remarkable constancy (Moynahan). There may be a stabbing pain under the right costal margin upon deep breathing. Dull epigastric pain, not relieved by food, is common.

Sherren stresses the irregularity of symptoms, which come and go at intervals and are not so clear

cut as in ulcer, although it is difficult to distinguish the gastrointestinal type from ulcer or appendicitis. Among the toxic symptoms, migraine (sick headache with vomiting) is common and may be the only complaint. Ultimately the symptoms will localize sufficiently to lead to the diagnosis.

Gallstone colic is familiar to practitioners of experience and is seldom wrongly diagnosed. It develops suddenly or is preceded by a sense of uneasiness in the epigastrium or over the lower right ribs.

It may lead to nausea and vomiting and usually terminates suddenly. The attack may come without apparent cause or appear to be caused by exertion or by food. The frequency of biliary colic in the early morning hours when, from the position of the body, calculi in the gallbladder are apt to lie in the region of the duct, is probably due to the physiological contraction of the distended gallbladder.

In analyzing the pain of gallstone disease, it may be possible to differentiate between that of biliary colic and cholecystitis, and to recognize reflex and referred pains.

Murphy is authority for the statement that in seventy per cent. of the cases of obstruction of the cystic duct, pain is referred to the right subscapular region: in ten per cent. to the left subscapular region, and in twenty per cent. to the precordia, sternum and right subscapular regions.

Kehr states that it begins at the right of the eighth to eleventh dorsal vertebra, spreading to the right hypochondrium, from which it radiates to the left hypochondrium, umbilical and hypogastric regions, to the thigh, the right arm and neck.

PAIN

Pain due to inflammation or distention of the gallbladder is usually felt under the right costal margin and is not so severe as that of biliary colic. It may begin suddenly or gradually but as a rule slowly disappears.

Typical examples of reflex pains are those caused by pylorospasm of hyperchlorhdria. Pain referred to the right shoulder and arm, may be the only symptom leading to treatment for neuritis.

It may be referred to the left side of the abdomen, and to the precordial region, simulating angina. Examination will usually reveal superficial sensitiveness in the upper right quadrant of the abdomen, with rigidity of the rectus muscle. The pains that precede or follow an attack of colic, may be misleading when they recur at regular intervals after meals or at night. Intercostal neuralgia is occasionally complained of, involving the ninth, tenth, and eleventh right nerves.

Vomiting, accompanying an attack of colic, may be very violent and persistent, frequently without relieving the symptoms.

JAUNDICE

Jaundice, preceded by colic, is practically always due to stone. Jaundice, without pain, is usually caused by inflammation, or new growth of the ducts, or outside pressure. It is absent in eighty to ninety per cent. of all operative cases (Brewer).

Calculi in the gallbladder or cystic duct do not obstruct the flow of bile, unless the common duct is compressed by inflammatory products, or enlarged lymphatic glands. Frequently, however, a slight icteric tinge of the conjunctiva can be detected.

A stone in the common duct may cause intense jaundice if impacted. When it is small enough to act as a ball valve, intermittent jaundice usually occurs.

Pruritus accompanies intense jaundice and often persists after it has disappeared.

Fever depends upon the inflammatory reaction in the gallbladder or ducts. It is frequently absent, or manifest as a slight rise of temperature, during an attack of colic. In common duct stone with cholangitis, there may be a marked rise of temperature, with chills and profuse perspiration, simulating malarial fever. (Charcot's intermittent hepatic fever.) The temperature chart is characterized by angularity, rather than by curves, and by more or less prolonged periods of complete remission (Murphy).

PHYSICAL EXAMINATION

Of the physical examination, Kehr writes as follows: "Of all methods of diagnosis, palpation is the most important. Many a doctor who has had sufficient practical experience, nevertheless, never learns it, since lightness of hand is lacking in him. The physician should penetrate very gently into the deeper parts with the finger tips, so as to avoid muscular contractions. With bimanual examination we attain the best results. The palm of the left hand is placed on the right side of the patient's back and presses the liver upward, against the curvature of the ribs, while the right hand, resting on the gallbladder region, palpates, gently and cautiously, the diseased parts.

Then frequently appears, what could not be determined by the simpler examination, the egg shaped figure of the gallbladder, or one feels that limited resistance, which is so important for making the diagnosis. If the gallbladder does not reach the lower border of the liver, it will elude the examining fingers, even though distended. Here, the bimanual procedure is often decisive, since with experience, one can demonstrate a painful concentration at a particular spot."

Examination is facilitated by placing the patient in a warm bath, or by giving a few whiffs of chloroform or a small dose of morphine.

With stone in the common duct, tenderness may be found at the Mayo-Robson point (at the juncture of the outer third with the inner two thirds of a line from the tip of the ninth right cartilage to the navel). In simple gallbladder involvement, it is often possible to elicit tenderness at the point of approximation of the fundus of the gallbladder to the abdominal wall, where the outer border of the rectus muscle meets the costal arch (corresponding almost exactly to the tip of the ninth rib) or over the subcostal part of the liver; and on the dorsal surface, beginning slightly to the right of the spine and extending almost to the posterior axillary line, opposite the two lower dorsal and upper lumbar vertebræ, with maximum tenderness over a small area at the right of the twelfth dorsal. Sharp pain may be elicited by pressure on the anterior extremity of the eleventh rib. Chauffard notes tenderness also over the right phrenic nerve, the right shoulder and at the angle of the scapula.

The phrenic nerve tenderness is confirmatory evidence of some value in the absence of thoracic disease.

(*To be continued*)

Historical Medicine

Maimonides' Treatise on Poisons

LOUIS J. BRAGMAN, M.D.
Syracuse, N. Y.

In Virchow's Archives for 1871 (1) a German revision of an unedited Hebrew translation of the original Arabic work of Maimonides on poisons was published by M. Steinschneider. Realizing that this treatise, which according to Garrison (2) was much cited by medieval writers, has never appeared in English, the following rendition (3) from the German was prepared with a view towards making available one of the best known of the contributions of this renowned twelfth century physician (4).

From about the time of 1190, Moses Maimonides was favored with being installed as physician to the household of the Vizier Kahdi-el-Fadhil. The book of poisons was a direct consequence of this exalted position, for in a long dedication in praise of the virtues and acts of kindness of his patron, he quoted a letter that the Vizier wrote to him in the year 1198:

"I have but yesterday thought upon this, that one can be bitten by a poisonous animal, so that before he comes to us and takes the theriac, the poison could have spread and caused his death, especially should he be bitten at night, so that he first comes to us in the morning; further, I have considered that these theriacs which are so hard to prepare are used up on the least occasion, for example, in the case of the bite of a scorpion or a spider, which calls for a theriac of some forty-two substances; therefore I command you to compose a treatise of small size and terse style on the treatment which is to be put into effect in case of a bite; mentioning the methods of cure, the diet, and also a few theriacs which are generally useful for the patient, apart from the two large theriacs which are given when nothing else suffices."

To this flattering commission Maimonides modestly replied:

"I have begun to execute his command, and to write this essay, which I have called the *Treatise of Fadhil.* Without doubt my master is aware that all the ancient and modern physicians have written tracts on this subject, and have handled it in great detail. I have not had the design to present something original, which had not as yet been written about, or which is unique; rather have I made it my purpose to gather together a small number of opinions on the subject which may be of some value."

He further declared his intention of mentioning only the simple and useful remedies, refraining from piling up a great number, which would only be difficult of comprehension. He would emphasize only the most effective ones, and those easiest obtained and prepared. On the subject of the preparation of remedies, he added:

"Doctors often mention a simple remedy which may be very effective against a deadly poison but do not tell how to prepare it or what proportion to use, presuming that the reader is acquainted with these details. On this account I will analyze the preparations in this essay so that one will find it complete in all details. And I will mention only those combined remedies which are easily preserved and are most useful."

He divided his treatise, as will be seen, into two main sections, the first on the bites of snakes and other animals, consisting of some general rules, applications of remedies to the wounds, simple and combined medicines, various means against specific bites, and types of bites in general and particular. The second part deals with the prophylaxis of poisons, rules to be followed in cases of actual or assumed poisoning, simple and combined remedies against poisoning, and rules for those who are unaware of the nature of the poison taken.

And, as he concluded in his foreword, only a few of the ways and means were considered, for the purpose of shortening the treatise, "to which," he piously added, "may God guide us in the proper direction."

SECTION I. CHAPTER 1. GENERAL RULES REGARDING BITES

In case of a bite, constrict the bitten place as tight as possible, so that the poison will not spread throughout the entire body; while this is being done, make an incision with a knife over the same place that was bitten; suck the wound with the mouth and then spit out all that has been sucked in. Rinse the mouth with olive oil or wine and oil before sucking, and anoint the lips with violet oil if it is handy, or if not, with olive oil, for the protection of the one who is to do the sucking. Finally there should be no diseased condition present in the mouth nor any decayed teeth. Some doctors maintain that the assistant should not have partaken of any food, others that instead of being in a fasting state, he should have eaten a little. It seems to me that a state of fasting is more advisable for the victim, but for the one who is to suck the wound it is dangerous, and *vice versa;* for the saliva of a fasting person is beneficial for the healing of wounds, as well as for most virulent wounds. If there should be no one on hand to suck the wound, or if the one who has been so designated proves to be in a weakened condition himself, cupping should be resorted to, either by means of fire or without; the former is more effective in that it combines suction and heat. Immediately following this, the stomach should be emptied by means of a mild emetic; but if vomiting is difficult to provoke, oil and butter can be taken; however, it is advisable to guard against painful vomiting. Promptly after this a strong antidote should be taken, or as a substitute a mithriadic electuary, or one of the special electuaries which are effective against poisons, or if these prove inefficacious, resort can be had to one of the simpler remedies described later on, and taken according to one's judgment. Then apply some remedy, either singly or combined, which will serve to

draw the poison out. After an hour the patient describes his symptoms. If the pain has subsided, and if his color is good, nothing more happens. However, care should be exercised to prevent the patient from falling asleep, for in sleep the bodily heat tends to draw the pus towards the inside of the body, and the poison may thus permeate deeply; if the vital organs should be reached, death will follow; hence under all circumstances prevent him from sleeping. If the tourniquet is painful, loosen it a bit. If the medicine has already passed through the stomach, eight hours being necessary for this, give the patient nourishment in proper proportion for a bitten person. But it is necessary to observe whether the pain of the bite is more severe because of the food; if so, discontinue all previous treatment, kill a young pigeon, split open its stomach, and lay it upon the wound. As fast as its warmth diminishes, replace it with a fresh one. If a young pigeon is not available, substitute a large hen or cock. Above all remember that the application should continue until the pain has disappeared and the poison extracted. If a fowl can not be obtained, pour vinegar on the bite, or prepare a plaster of flour boiled with olive oil; this will ease the pain. Finally, after all these remedies have been employed, and there is no improvement, but rather the condition is aggravated, and the patient becomes weaker, then treatment is necessary which is out of reach of the untrained person. In this case an experienced physician must be summoned, one who is well acquainted with the usual methods of attacking the various symptoms which arise according to the individual temperament of the bitten person.

CHAPTER 2. SIMPLE AND COMBINED REMEDIES WHICH CAN BE APPLIED TO THE BITE

The simple remedies which serve to draw the poisons from the body when applied to the bitten part are mentastrum, basilicon, crocodile fat, pigeon and duck dung, sulphur, asafoetida, goat's dung, green bdellum, table salt, onion, jew's stone; whichever of these can be obtained is powdered and kneaded with honey, from which a paste is prepared and applied to the bite after it has been sucked or cupped; in this manner the poison will be extracted. A similar result may be obtained by means of a paste prepared from the husks of nutgall. The seeds of citrus pitimina, if obtainable, ground and prepared as a paste, make a remarkable specific against the poison of bites, and prevent fatalities.

Combined remedies. Grind together equal parts of onion, salt, and pigeon dung, and apply to the bite. Althea seeds, moist or dry, ground up with vinegar and oil, can also be applied. Stronger poultices: mustard and potash and unslaked lime, in equal parts, combined with pinus cedrus; any one of these should be applied quickly, before the poisons get a chance to penetrate. Another remedy: salt, ashes, figwood or grapevine, and saltpeter, in equal parts combined with vinegar and nutgall husks. Another which Rhazes has proven effective for the pain and the poison consists of serapinum, castoreum, asafoetida, sulphur, pigeon dung, mentastrum, and calamentum, well mixed in equal parts with old oil, and prepared beforehand in order to have a plaster ready in case of emergencies.

In the opinion of the writer strong cinnamon can be used when calamentum cannot be obtained. It is also of value if the mentastrum is to be boiled with vinegar in order to prepare a paste.

All these substances are easily found and are effective in this dangerous condition.

CHAPTER 3. ON RULES FOR SIMPLE REMEDIES WHICH ARE TO BE USED IN THE CASE OF BITES OF POISONOUS CREATURES

Physicians mention many simple remedies which are of value in counteracting the bites of all poisonous animals. Your servant has considered them all, and has become acquainted with those that have a warm nature, but of the cold ones he is only aware of the root of the mandrake. It is not probable, however, that warm or cold means are effective against warm or cold poisons simply because of the similarity in that respect, for the effect of a remedy against a poison does not depend upon the quality (i. e., whether it be warm or cold), but upon its entire nature, with which the physician cannot be wholly acquainted; according to philosophical speculation remedies are effective in the degree of their specificity. Those remedies which are recommended by physicians are wine, water, and vinegar and milk. I believe, however, that first the condition of the patient should be investigated, in those incidences when the species of the animal is unknown. If the patient is feverish, as results from the bite of a snake, the best choice of remedies is milk or vinegar. If the patient is very chilly, as results from the bite of a scorpion, wine should be taken, but if it should be contraindicated, a decoction of anise can be taken, for physicians agree that anise is good for all animal bites. After this general introduction I will speak of those remedies which we have on hand, which are remarkable for their healing power, and which have been handed down by experience as direct remedies. Citron seeds are effective against all poisons resulting from bites. Preparation: Remove the covering of the seeds, powder the kernel, and dilute to the proportion of two drams; Avicenna actually lets it take up two sicla in wine or water. There is no difference between the seeds of the sweet and sour fruit.

Extremely green emeralds, somewhat resembling sapphires, can be made use of; two carats, well ground, are mixed in cold water or wine. According to Ibn Zohr it is beyond all doubt established as a remedy; it antagonizes the poisons, and causes them to be eliminated through vomiting, just as it accomplishes this result for theriac, when this is lacking.

Bezoar is not mentioned by Galen. The bezoar stone, surnamed the animal stone, is shaped like an acorn; it is deep green in color, and is formed through condensation, on account of which it appears in the form of layers. In the East it is said that it is to be found in the tears of the ram; others claim that the gallbladder contains it, and this is true. In regards to the mineral type of the bezoar, this is the stone that is found in Egypt, and that has many colors, and in earlier writings was considered to be wonderful; but unfortunately none of it has been preserved. I have tried all the mineral stones that we have in our locality as remedies against the bite of the scorpion, and they have not helped in the least; I used many of them in a special case with no result. On the contrary the rationale of the use of the animal

bezoar has been established by experience. Preparation: Pulverize with oil on the grindstone, until it lacks an eighth of a scruple to a carat; then part is taken, and part put on the wound as a plaster, and the patient will recover.

The three remedies which have heretofore been mentioned are good against animal, vegetable, and mineral poisons, as has been established by experience, namely, the seeds of citron, emeralds, and animal bezoar. Arak al-Hija, that is, the roots of a plant found in the vicinity of Jerusalem, has been established by experience to be efficacious. It is ground up, dissolved in cold water or wine in the ratio of one to three and a half drams; it has not the strength, truly, of emerald and animal bezoar, yet it is answerable, in general, so that it may be prepared and kept ready on hand. A botanist tells me that this remedy is the root of melilot.

Any kind of tripe, especially hare's, prepared in the proportion of one half dram to one siclus, helps in cases of animal and mineral poisons. Another remedy is Roman spices, one dram powdered and taken in wine. Others are as follows: The plant gafit and its seeds, two drams powdered and taken with wine. Balsam oil, one half siclus with fresh milk. Balsam wood or shrubs, six drams boiled with one half litre water until a third has evaporated, taken warm.

In accordance with all physicians crushed onions is a great theriac against cold poisons, and is also of help against warm. Preparation: Peel the onions, grind them a bit, then take one to two sicla of them. Electuary of ginger up to two drams in warm water. Roots of mandrake powdered and sifted, two drams with one ounce of honey. Powdered cinnamon, two sicla of the powder in cold water. Bitter costus, powdered and sifted, one siclus in wine. Aristolochia longa, in the same form and quantity. Agaricon, and especially algatia, and nuts. Iris, also called gladiolus, powdered, two drams in vinegar or wine. The seeds of parsley or leek, powdered and mixed with wine. Carraway, four drams powdered, in water or wine. Anise, in the same manner. A decoction prepared from boiled river crawfish.

All these remedies are easily obtained, with the exception of balsam oil, which, however, is very easily found in Egypt. Whatever remedy is selected should, as previously mentioned, be taken immediately after vomiting. The patient will also be grateful for a mixture of three ounces of warm honey in an ounce of oil of rose.

All the quantities mentioned are computed for those who can take vigorous remedies, and who are at least twenty years old. For those from ten to twenty the medicines should be diminished proportionately. It seems that no one can recover from a severe bite or sting under the age of ten. Nevertheless that age should be given one quarter of the quantity of the above simple remedies, and one quarter dram to one quarter siclus of the theriacs, according to the opinion of the doctor; one must take into consideration the special temperament and the season.

CHAPTER 4. COMBINED REMEDIES

The most important of these is the large theriac, of which one fourth of a dram to one fourth of a siclus can be taken. Then comes the mithridate, one half to one siclus; then the theriac comprised of four parts, one to four drams. Preparation: myrrh, laurel seeds, serpentaria, gentian, in equal parts, kneaded with skimmed honey in weight threefold all the ingredients; this will provide a single theriac against all poisons. This is the foremost composition used by the ancients.

Rhazes mentions another theriac containing asafoetida, which is worthy of being known. Preparation: myrrh, leaves of dry rue and dry mentastrum, costus, black pepper, and piretrum, one ounce of each, asafoetida, one and one half ounces dissolved in wine; the other ingredients powdered dry and sifted, and all kneaded with skimmed and heat concentrated honey. In warm countries one to two drams are taken, in cold, two to four.

A theriac of nuts is especially valuable, and is satisfactory for ordinary use; and whoever accustoms himself to taking this as a food with his meals, will find that he will be protected against deadly poisons. Its preparation calls for one dram of figs, salt, nuts, and rue. The quantities called for by Galen are four parts of rue leaves, two of nut meat, five of salt, two of dry figs, all macerated together and combined with myrrh. Rhazes prescribes the following: dry, shelled nuts, one part, thick salt, dried rue leaves, of each, one half part, white figs, as much as the rest combined. Divide into little more than the size of a nut, and take a part of that.

Ibn Zohr mentions the theriac of onions, which in his experience had proved curative against the bite of a poisonous animal. Preparation: Peeled onions, four ounces, leaves of parricide, in the vernacular called matrunia, gentian, black, white, and long peppers, and ginger, about an ounce, white mushroom, stichados, of each one half ounce, and opium (if it is damp, rub the wounded part with it), two drams dissolved in wine until soft. Mix the dried ingredients, and knead it all in pure, heat concentrated honey. The dose is one to three drams.

All these theriacs can be taken either in wine or in a decoction of anise, according to choice. The individual dose, ranging between the smallest and the largest, is determined by the age, the severity of the attack, according to the time of the year, and the country. Cold seasons call for warm and vigorous methods, and *vice versa*.

Avicenna mentions a universal theriac of this composition: nigella, harmel seeds, carraway seeds, three drams of each, gentian, round aristolochia, of each one and one half drams, white pepper, and myrrh, of each an eighth, all kneaded with pure, skimmed honey. The dose is one half dram.

Galen mentions a remedy effective against the bites of very poisonous animals as well as for uterine colic. Preparation: extract of hyocyamus and schakran, four sicla of each, castoreum, white pepper, myrrh, opium, one siclus of each, all powdered, and mixed with three ounces of sweet wine, which has been warmed in the sun until it has become strong. Pills are formed from this, of the size of an Egyptian bean. The dose is one pill in three ounces of wine.

According to the writer, who has selected statements from the ancient and modern doctors, these combined methods of treating all kinds of emergencies are the easiest, the safest, the most useful, and the most tried; anyone can prepare them, according to his desires.

CHAPTER 5. SPECIAL REMEDIES FOR THOSE WHO HAVE BEEN STUNG BY A SPECIFIED INSECT

Scorpion.—One starts with the general directions as mentioned, of incision, sucking, and constriction, then the application of a plaster to the wound; after this the specific remedies against scorpions are taken, according to what one has on hand.

Drink three drams of the leaves of the herba citrina, then apply the same to the site of the bite. Cantharides roots make an exceptional remedy for the scorpion bite. The maximum amount used is two drams; a plaster is prepared of it for the wound (if it is damp, it is bruised and applied directly to the wound). Boil an ounce of it in two litres of water until the strength has disappeared; then wash the wound, and apply a plaster made with sulphur and parsley, of each one part, garlic, two parts, all kneaded together. Another plaster is made of salt and linseed, of each one part, garlic two parts. A theriac which is appropriate is the one that consists of four ingredients; the dose is one to four drams.

Galen mentions a theriac specific against the bite of the scorpion and the sting of the spider: Aristolochia, four sicla, pepper, two sicla, opium one siclus, kneaded with honey, and rolled into pills of the size of an Egyptian bean. The dose is two beans with three ounces of sour wine.

All the remedies that have been mentioned against the bite of the scorpion, be they simple or combined, must be taken with pure, strong wine: for that causes a cold poison, and kills through its coldness. In absence of wine, boil up anise, as mentioned. If it is not clear, when boiled, powder one siclus of it and sift with a litre of wine. Recent physicians have found this worthy: green ischnan, powdered and sifted in a very fine sieve, softened with cow's butter, and kneaded with honey; two sicla of this will promptly quiet the pain of the scorpion's bite. Honein observes that if a plaster of white naphtha is put on the wound, the pain is promptly relieved.

The author is of the opinion that the poisonous animal which is mentioned in medical writings under the name of the runner, is a sort of small scorpion, which raises its tail, but not its head, like a scorpion, and runs fast along the ground, and hence the name. It is found in regions in the East, and it is asserted that it is more harmful than the scorpion; all the remedies that suffice for the latter, are likewise satisfactory for the former.

Spiders.—This name designates many kinds of insects, according to some, six, to others, eight; they all belong to the species of spinners, in the vernacular, spiders. The worst specimens, according to physicians, are met with in Egypt. Two species, in most countries, are found in houses; one of these is the spider with long legs and small body, which weaves its web between the wall and the garden, a fine black web; the other is of large body and short legs, and spins a white sapphire-like web in the garden, resembling the thin substance called bukran.

The harmfulness of these two species is not great, oftentimes one does not experience their bite at all; often one is bitten in the night, without noticing it; but in the morning one finds the place swollen and red. If one puts bread thereon which has been chewed in the mouth, or flour cooked in oil and salt, the swelling will soften the same day.

The other species of spider is found in ruins; some have tails; these are called tarantula in Egypt. The bite of this species is more serious than that of the scorpion, and all that helps for the latter, helps for the former. I have discovered a remedy which is specific for the bite of the tarantula, consisting of the roots of asparagus, five drams boiled with six ounces of wine, and taken as a drink. One can also place a plaster of the leaves of the herba citrina, one to four drams in wine on the wound. Drink two to six drams of the fruit of the tamarisk. Or drink ten drams of powdered mulberry leaves extracted in water. All these are to be taken in wine or in a decoction of anise; another preparation is nigella, one siclus, powdered, and mixed with cold water. Plasters can also be made of the extract of myrrh in wine; or milk of garden papaver; all used after the incision and sucking.

Bees and wasps.—Drink a solution of the seeds of althea, five drams boiled in one half litre water and one ounce wine. Or balsam leaves, one siclus in two ounces of oxymel. Also, dry casbor, and sugar, one siclus of each in cold water. Or cold vegetables, like horseradish, lentils, purslane, and gherkin; all these are curative; as is a drink prepared of unripe grapes in water. The following is a suitable plaster for the bitten area: vinegar, and duckweed, some cloth soaked in vinegar, camphor, and rose water. Or this: plaster of mallow, fresh casbor or senpriviva, or leaves of sandarac or honey and vinegar with salt.

Snakes.—It is asserted that there is nothing better than the great theriac for all deadly poisons and the bites of all animals, not to mention the bite of the adder, against the extreme harmfulness of which all the philosophers and physicians have directed their special attention, and as a consequence of many years of experience have selected the large theriac. If this is not obtainable, one can use the mithriadic electuary, and in absence of this, the trochiscus pani kaono (panacea?). Preparation: hendacochum, trifolium, round aristolochia, ruta, agrestis, pollen of iris, in equal parts, kneaded in oil. Of the trochisci prepared in this manner take one siclus in an ounce of old wine. It is claimed that this substitutes for the large theriac in adder bites, hence it should be kept ready, on hand.

Herba des fontes, that is, casbarar el-bir, boiled in wine is good for adder bites; also the root of the white vine, six drams boiled in wine. Mushroom is a good theriac against adder bite; take one siclus of it, and sift it in one half litre of old wine.

To aid in the constriction of the wound after the incision and the sucking, make a plaster of extract of brassica mixed with wine. Galen mentions a plaster for snake bite, with these directions in his own words: Serapinum, asafoetida, opopanax, one siclus of each, galbanum and sulphur, which should not be brought near a flame, two sicla of each, the dry ingredients powdered and sifted, the syrup dissolved in wine, and the whole made into the form of a plaster; put it on the wound, and cover it with a fig or nettle leaf.

Mad dog.—The physicians mention many signs of a mad dog, all of which are diagnostic; I need not go into the details in this discussion, for it is instinctive for a man to remove himself from the immediate vicinity of a mad dog when he sees one,

just as it is from an adder or scorpion, the dog himself flying before him, and crawling alone along crooked alleys, close to the walls, without barking. It is true that people take great pains to kill him just as soon as he is recognized. But sometimes it happens that the dog bites before he is identified, or that a person is bit in the dark unknowing whether the dog is mad or not. All that is to be done to cure the bite, however, should be done before the fear of water in the dog develops; after that no one, according to my experience, is able to survive. He who is bitten by a mad dog will not always suffer severe pain right after the bite, as in the case of other bites, but the disastrous symptoms which reveal the madness first appear after eight days, or often, after a long period of time. Therefore everyone who is bitten by a mad dog, or a dog of unknown disposition, must heed the general rules which have been already mentioned, namely, constriction, incision, suction, congestion through cupping, vomiting, partaking of the theriac, and the special rules mentioned in this section. These are good remedies: licum, one half of a siclus daily in cold water, nigella rubbed and sifted, one siclus daily in cold water, gentian similarly. River crawfish is by far the best; it is burned, powdered, and sifted, and one dram of the ash is taken daily in water. Of the combined remedies which Galen and others have proven, the following theriac is valuable: Myrrh, one dram, gentian, five drams, ash of river crawfish, six drams, all powdered, and two drams of the powder taken in cold water on the first day, increasing one half dram every day until on the ninth day six drams are taken; then increase no more. Another composition that has been proven is: gentian, and myrrh, each one dram, ash of river crawfish, two drams, powdered and taken daily in cold water. The following is a generally used plaster: pollen of iris, boiled in wine. Another plaster: bitter almonds, pounded with honey until quite thick. Another: leaves of damp mint pounded with salt, with asafoetida softened in wine; fill the wound with this, after enlarging it. Another: meat of nuts, salt, and onions in equal parts, thickened with honey, until it takes the form of a plaster, and applied to the wound.

These remedies should be used immediately.

The treatment of wounds by means of medicines and plasters takes at least forty days; under all circumstances leave the wound open for this length of time; if it tends to close, spread it open by means of combined plasters. As is well known, no more is to be expected than that within these forty days certain complications will arise according to the special temperament and disposition of the individual, so that in addition, purges, enemas, changes in diet, and poultices will be necessary, which, however, is not to the purpose of this discourse; that which has already been mentioned should be done from the very start, until a doctor is obtained, or if that is difficult, it will suffice to get some one who understands the situation in this peculiar state of affairs.

It is sufficient for the bite of a human being, or a domestic dog, or other poisonous animals to massage the part repeatedly with oil, until the pain has gone; then put upon the wound a half cooked bean which has been chewed in the mouth until it has become a plaster; a chewed wheat kernel is also satisfactory. If the one who chews the bean or corn is hungry, and chews it in the morning, and is a boy or a youth, the value will be all the greater. Further: make a poultice of pounded onions mixed with honey. Another remedy: pollen of iris kneaded and mixed with honey. Or: apply a small globule of sour bread which has been chewed.

This is important: the worst of all bites is that of a fasting person. If the biter has a bad mixture of juices in his body, or if he is poorly nourished, then the bite is as bad as that of a poisonous animal, and especially if the one who is bitten has recently eaten heartily, since this induces towards putrefaction, and increases the danger. The above treatment suffices in the case of the frequently occurring bites and stings which are met with in this locality. Be careful, however, to distinguish between the bite of a mad dog, and one that is not mad; for on that account many people have died, as sages have related, and as I can personally vouch. You must first be convinced, therefore, that the biting dog is not mad, and then you can proceed in the manner explained, and close the wound. If there is any doubt as to the dog being mad, presume that he is. An old well informed doctor told me that he saw a spinning factory boy who was bit by a dog; the animal by chance did not appear right off to be mad; and the doctors did not so pronounce the dog; so that the wound was allowed to close after a month or so. The boy improved, and for a long time conducted himself in a normal fashion, when finally he became apprehensive of death and died. Beware therefore of conducting yourself as above, for there is no analogy to the virulence of this poison.

CHAPTER 6. DIET IN GENERAL AND PARTICULAR FOR THE BITTEN PERSON, TOGETHER WITH A FEW APPROPRIATE SPECIFICS

All persons who have been bitten or have taken poison should eat bread with oil and butter, fresh milk, meat of figs, pistachio and other nuts, avellana, garlic, onions, and ruta; these can be eaten singly or together; avoid meat and especially fowl, for meat tends to cause the blood to putrefy, on account of the particular nature of the poison. Eat plenty of salt at meals, for that tends to dry up the poison; honey is beneficial; and there is nothing better than butter. I know of no sufficient foundation, neither rational nor traditional, for the spread of the idea among certain communities, that the bitten one should eat only unleavened bread. He should drink as much wine as he can, and mix it with his food, particularly if he was bitten by a scorpion, in which case highly intoxicating wine is indicated. Also take large quantities of nuts, figs, garlic, and ruta in strong wine, for the alleviation of the pain. Thus far the treatment outlined is for one who is chilly or slightly warm. If the bitten person is feverish, and calls for much water, then he can take sour things with a little butter; he should suck a sour apple or sour pomegranate, and drink pomegranate juice. If the inflammation is severe, let him eat cold vegetables, like endives, lenzones, lettuce, and cucumbers; it is imperative that they should be taken with oxymel; the drinking water should be mixed with some wine; do not omit to eat the meat of nuts and figs; and above all eat cautiously according to the strength of the fever.

(To be continued)

Editorial Articles

CLIMATE AND CIVILIZATION

A great deal has been written at one time and another on the effects of climate on man, on character, energy, hardihood, mentality, and so on. Of course it is obvious that climate has an immense influence on man and his doings. The book entitled *Climate and Civilization,* by Elsworth Huntington, of Yale University, sets out to show how climate has influenced the destiny of man. A bracing, stimulating climate produces a race characterized by energy of mind and body and by initiative and perseverance, and consequently should produce the highest standard of civilization. This is borne out by facts to a certain extent. The civilization of northwestern Europe, where the climate is cloudy and invigorating, is of a high grade and conducive to the raising and development of a vigorous race. Great Britain, Germany, Belgium and Northern France are populated by energetic races fashioned and moulded by climate. At the back of all lies the question of health and this is determined by climate to a very considerable extent. The prosperity of a nation depends on the physical and mental fibre of the inhabitants. This hinges on the air, food and water which falls to their lot, and which in turn is chiefly a matter of climate.

But while climate has most to do with the making and development of a nation it cannot save a population from the evils of civilization. A departure from the more primitive modes of living and the introduction of enervating and luxurious habits generally spells the fall of a nation, however stimulating its climate may be.

Mr. Huntington points out that the human animal now rides instead of walks; lives in stuffy houses instead of out of doors or in caves; wears clothes instead of exposing his body to the weather; and eats soft concentrated food instead of that which is raw, tough and bulky. He preserves the sick and weakly instead of letting them die; he permits an economic and social system which causes the people with greatest mental power to have the fewest children, while the stupid breed like rabbits, and so on.

The evils of civilization if allowed to continue unchecked will wreck a nation reared and brought up in the most invigorating climate, but this is in spite of the climate. It may be taken as an axiom that climate has a remarkable influence on character, that a people bred and raised in an enervating climate will be listless and apathetic and that a population born and brought up in a bracing climate will be energetic.

Too great prosperity is one of the chief evils of civilization, against which precautions must be taken, and it seems as if in his book Mr. Huntington is warning the people of this country to beware of this evil.

POSTURE

Posture is one of those subjects about which the more one knows the less he knows, and of which those who have studied least speak with most assurance.

Posture is the resultant of complex anatomical and physiological conditions, but the conditions usually considered as producing it are the simple ones of wrong habits of sitting or standing.

We talk glibly about good posture and bad posture. Anyone will classify a hundred persons into those having good posture and those having bad posture, but no two persons would agree in their classifications and they will find difficulty in placing a considerable number in either group. When he has finished, not even the classifier will be able to say that those whom he believes to have the best posture are any better off for having that posture, so far as health goes, than those who may be possessed of "bad" posture, nor can it be said that many of those with "poor" posture can by any means be brought permanently into the group designated as having "good" posture. Only those who have worked longest at trying to improve posture know how little can be done along these lines of endeavor.

Dr. E. H. Arnold, of the Arnold College of Hygiene and Physical Education, has been delving into the foundations of "good" and "bad" postures. He has, in other words, been studying the structure of individual vertebral columns and of the pelves from which these columns arise. Anyone who has seen much of bones from many skeletons is impressed with their great variation in size and shape and (so far as the spine is concerned) in number. Arnold has made his study of students of beyond high school age in the living subject by x ray pictures. He finds, of course, this same variety of shape and size and number of vertebræ and the postures of the pupils depend, to a very large degree, on these structural foundations and on structural faults. One can apply exercises or even orthopedic appliances to these persons for years without effect, for they cannot reshape the foundation stones.

Some persons classified as having poor posture are so from heredity, some fall into this class from

other developmental agencies, while postnatal nutritional causes account for many of these boney variations which are really normal or good posture (at least, the best they will ever have) for the persons possessing them. In the years beyond youth, occupations or arthritic diseases account for not a few cases. The result of our treatment of these structural cases is usually slight, as is to be expected.

Besides the large number in which a posture which we call poor is due to structural conditions, there are many cases due to neuromuscular weakness, back of which are chronic disease, poor nutrition or fatigue. A change to what we assume to be good posture can undoubtedly be brought about in many or most of these cases by getting at the real causes, though not merely by exercises or by telling the person to straighten up. Round shoulders, however, can, in the great majority of cases, be cured.

After all is said, or done, we still do not yet know where to draw the line between good posture and bad posture so far as the effects of posture on the individual are concerned. What we pronounce bad posture for one person is, in most cases, doubtless as good for that person as the posture called good assumed by another person. We are too often applying purely esthetic standards where they do not belong. Even our esthetic standards along these lines are incorrect if we may trust the art of the Greeks, for their good posture is one of ease and comfort—of naturalness rather than such very commanding having-your-picture-taken attitudes shown in portraits of George Washington or of Queen Louise which are usually held up as models for lesser mortals. We wonder whether these persons always carried themselves so or whether it was only for pictorial purposes. At any rate, if they did so their backs were built differently than those of most of us.

MEAT EATING AND HEALTH

Of all the speeches made at the recent gathering of the American and Canadian medical profession in London, that of Dr. Wood Hutchison attracted the most attention. The reason for this was that he spoke on a subject which the man in the street can understand and one which has been widely discussed by medical men both in medical and lay press during the past few years. Also Dr. Wood Hutchison expressed views which are not held or taught by the majority of the medical profession, but which are perhaps in consonance with the tastes of most laymen.

There has been to some extent a campaign almost against meat eating by a section of the profession. Possibly, in their zeal for dietetic reform, they stigmatized the consumption of meat more forcibly than was warranted by evidence. Also they may have lauded a vegetarian diet more highly than appears to have been proved by the test of experience. On the other hand, it seems that Dr. Wood Hutchison in his anxiety to show that the new teaching on diet is wrong, or rather does not agree with his views, went further than scientific evidence or even common sense facts go, in his eulogy of meats or of any diet which most strongly appeals to the palate of a patient. In the first instance it may be said that a certain amount of exaggeration has been employed by those who urge that little or no meat is required to maintain an individual in health. In considering this question many points must be weighed carefully. The occupation of a person, the conditions under which he or she works, age, the climate, personal idiosyncrasies and so on. The young strong man or a man in the prime of life engaged in hard manual labor in the open air, in a cold or temperate climate, can assimilate, and thrive on a quantity of animal food which would be harmful to a man who was doing light work or leading a sedentary life. In the case of the manual laborer in the open air in a cold or temperate climate who will say that meat is not the most suitable food for him?

Although it may be urged that the Italian does work equally hard in the open air on a diet almost vegetarian, the protein he ingests being, as a rule, mostly in the form of cheese. But in the case of the Italian the work is done for the most part, in a warm or comparatively warm climate. Age again is a factor to be considered. After a certain age, the bodily powers fail, and the consumption of a considerable amount of meat may place too great strain on the kidneys and the digestive organs. Moreover, the personal equation must always be taken into account. "What's one man's meat is another man's poison." Habit is another factor which plays a part. If a child is brought up on meat, as New Zealand, Australian and Canadian, most American and British children are brought up when their parents can afford it they seem to do well on it. So do also the Italian children on a vegetable and cereal diet with a certain amount of non-animal protein and they appear to reach a green old age on a fair average of life, on such a diet. It is likely that the meat eating races as New Zealand, Australia and Canada, cited as examples of the beneficial results of meat eating, do not have the lowest death rate in the world merely because they are large meat eaters, but partly because they live for the most part a healthy out of door life in a good climate and are not stinted for food.

In the cities sanitation and hygiene is good and assists in keeping down the death rate. Of course, there is much variance of views on the diet question

but as far as civilized life is concerned a few facts seem to thrust themselves forward. One is that, as a rule, the well to do eat more than is good for them and above all eat food which has been overcooked. The poor do not get enough to eat; what they do get is frequently unsuitable, generally of inferior quality and almost always overcooked or badly cooked and lacking in essential qualities.

The great fault of civilized diet is that it is too often overcooked and before being cooked has been robbed of its most nutritive properties. It is allowed on all hands now that a food to be up to the proper standard should contain a more or less definite proportion of the mineral salts and of the vitamine elements. What then does it profit a man if he is given food which even before being cooked has been robbed of some of its valuable properties and is then so cooked that it is robbed of other almost essential properties. It is too sophisticated food and the overcooking of food that are among the greatest drawbacks of civilization.

This applies to meat, which is cooked frequently so that little virtue is left in it. Dr. Wood Hutchison is by no means alone in holding that the campaign against meat eating is being carried to absurd lengths. Dr. Harry Campbell has long contended that man is naturally a carnivorous animal and that on protein in the shape of meat he does his best physical and mental work. But Dr. Campbell advises discretion in the consumption of meat and does not recommend it in large quantities for the sedentary or the elderly or aged. He, however, does insist vehemently that the tendency of the age to eat pappy food from which most of the nutritive properties have been extracted and which give no exercise to the jaws, to the salivary glands or to the functions of digestion, is most harmful and responsible for some of the diseases, and for a great deal of the ill health which prevails. Another forcible and pungent writer on dietetics, Dr. Leonard Williams, while he is not at one with Dr. Campbell on the question of meat, is most insistent on the point that food nowadays is overcooked far too much and uncooked vegetables and fruit, which contain all their natural elements including the vitamines placed in them by the sun, should form the greater part of a person's diet.

Dr. Wood Hutchison's refreshingly frank speech has done good in that it has once again thrown the limelight on a subject which is of the first interest and importance to the community and which is still open to argument. Further, it is to the medical man that the public look for enlightenment. Already great progress has been made in the science of dietetics, and the disputed points are gradually being elucidated.

WHAT IS HEALTH?

Educators are quite generally agreed these days that health should be given most importance in the school curriculum. At the same time some of them point out that health is something we cannot define. In a way health cannot be defined, but neither can we define life and we are constantly revising our notions about such fundamental phenomena as matter and energy. Even when we work out our definition of health it does not apply specifically as does a definition of electricity or of ether, for the health of one person is by no means the health of another.

Such a knowledge of the elusiveness of health and its dependence on heredity is of the greatest importance to health workers in order that they may be prepared to meet the demands of the occasional layman who demands proof of the results of efforts in sanitation and hygiene. It is perfectly easy to show that the substitution of a clean water supply for one infected by typhoid bacilli is a valuable procedure. Death rates and case rates give mathematical proof. But when it comes to evidence that medical inspection of school children or the teaching of hygiene to such children are producing results in better health we have practically nothing but *a priori* arguments to go upon. We do not know what would have happened had these children had no medical treatment and no information in hygiene, though we can surmise, from a few outstanding examples, of the effects of treatment that they would all have been worse off.

To the layman the weighing and measuring of results seems exceedingly simple, for we invariably believe more in the magic of an art with which we are unfamiliar than in the one we have studied most.

We cannot measure our own health from day to day, save to distinguish it as better or worse and even here the condition of our health may be one of mental origin, a mere state of mind, which will disappear over night. One human organism whose health we call delicate may be of more service and over a longer period than another whose health we pronounce robust. In other words, robust health is often less important than delicate health in that the former may exist in an organism which is destined by heredity and habit to go to pieces at a much earlier date.

If it is difficult to know when one is in health it is as difficult to say when he is just out of health, especially in a life that is filled with complex mental and physical conditions. The best we can do is to find out our bodily weaknesses, hereditary and acquired, and, as Lord Bacon said, take counsel of each daily experience. The physician can only seek out organic weaknesses and advise as to the limitations set by heredity, by acquired defects, and occupation.

Obituary.

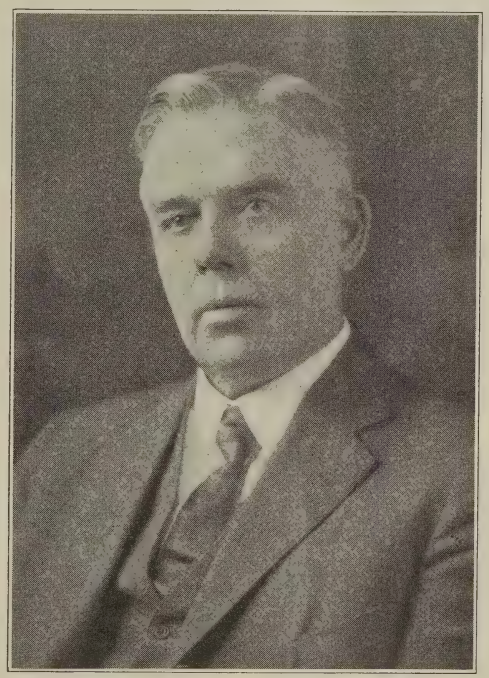
CHARLES B. DUNLAP, M.D.

Scarsdale, New York

Dr. Charles B. Dunlap has passed away. His sudden death on Sunday, June 6th, came as a great shock to all his friends and associates. Although Dr. Dunlap had not been well for some time, his condition was not considered serious; and he was active until the last. He attended to his professional duties on Saturday, and died at his home, in Scarsdale, the following day.

Dr. Dunlap was chief associate in neuropathology at the Psychiatric Institute on Ward's Island for twenty-four years, and was professor of neuropathology at the University and Bellevue Medical College.

Dr. Dunlap was born in Cambridge, Massachusetts, in 1863, and spent his youth in Monroe County, West Virginia, which had been the home of his family for many years. He returned to Cambridge to enter the Cambridge Latin School, and then entered Harvard College and was graduated in 1889. In 1893 he was graduated from the Harvard Medical School.



CHARLES B. DUNLAP, M.D.

After an internship in the Boston City Hospital, Dr. Dunlap served in the McLean Hospital for the Insane in Waverly, Massachusetts, and in the Massachusetts State Hospital for the Insane in Worcester, Massachusetts. He came to Ward's Island in 1902.

In September, 1902, Dr. Dunlap married Miss Anna Weld Carret, of Cambridge, who survives him, with three children, Martha Weld, Ruth Weld and Charles Edward Dunlap.

Dr. Dunlap is no more. He was laid to rest in Greenville, West Virginia, the home of his boyhood. The medical profession has lost a well balanced mind, slow to form or to accept an opinion, slow to judge or to criticize, careful in his deductions and conclusions. It has lost a man whose unfailing interest in his work was never overshadowed by any material interest. This was a fundamental characteristic of his nature. He valued money only because it was necessary to sustain life. He never gave it a higher place, and would not sacrifice one principle in its favor. He worked for the joy he found in his work, for the good his work might do. He was a true scientist. Those who knew Dr. Dunlap personally, knew him to be a devoted husband and father, always thoughtful, gentle, kind, sympathetic and generous. "Ye canna expect to be baith Grand and Comfortable," an inscription over the hearthstone of his late home, expressed the magnanimity of his being. He loved simplicity, and his home life was a reflection of this quality. He was a staunch friend, and those who shared his friendship will always revere his memory and gain inspiration from it. Dr. Dunlap is dead. The world has lost a noble soul, but the world is better because Dr. Dunlap has lived.

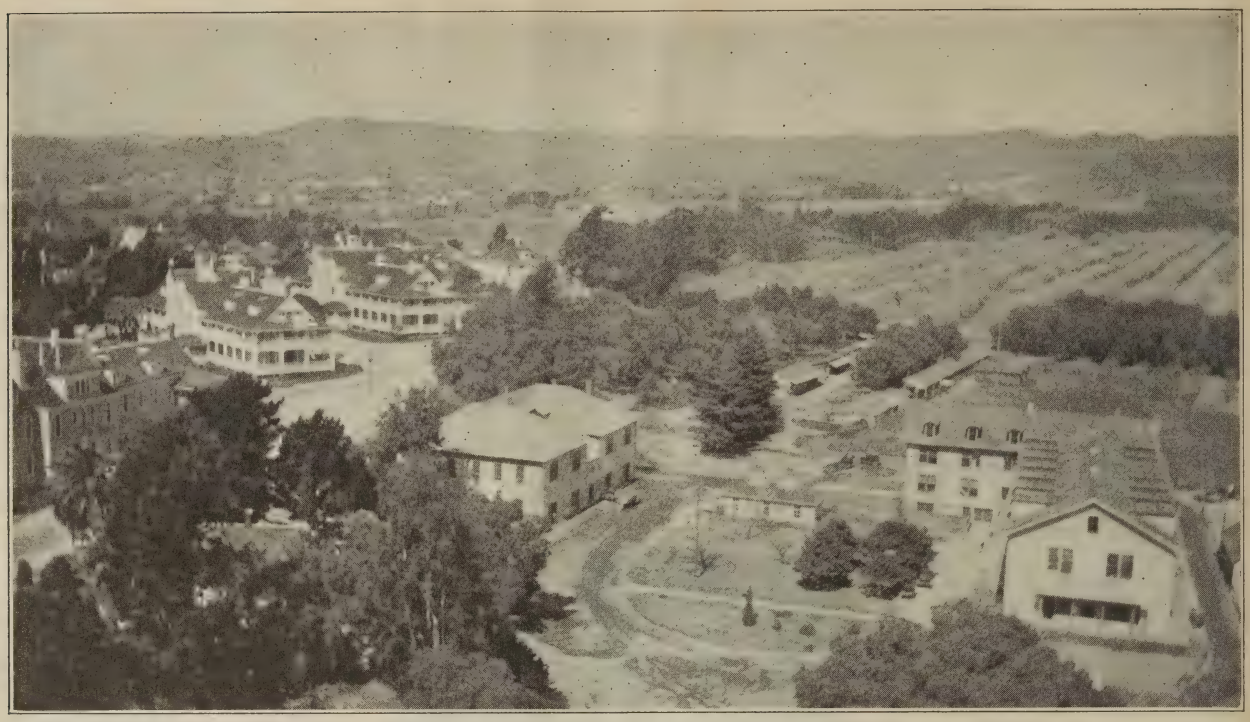
SIR JOHN WILLIAMS, BART, G.C.V.O., M.D. F.R.C.P.

London

Sir John Williams, a well known gynecologist and obstetrician of a former generation, died on May 24, 1926, at Aberystwyth, Wales. Although, perhaps, almost forgotten by the present generation, the name of John Williams in the heyday of his fame was one which carried great weight in medicine and surgery.

He was born in November, 1840, of yeoman stock, his father being both a farmer in Carmarthenshire, Wales, and an ordained minister of the Congregational Church. When a boy John went to the village school, then to the Normal College at Swansea, and in 1861 to University College, London. He qualified as licentiate of the Society of Apothecaries in 1865 and held several hospital appointments. When he had taken the M.B. degree in London he returned to Swansea and settled down as a general practitioner. In 1873 he was appointed assistant obstetrical physician at University College Hospital, London. In 1883 he became obstetrical physician jointly with Dr. Graily Hewitt, and in 1887 professor of obstetrical medicine at University College. He was then appointed to the Court of Queen Victoria, and for some time was in England the undoubted head of his branch of medicine. Honors followed. He was made a K.C.V.O. by King Edward and a G.C.V.O. by King George. The King of Denmark gave him the Grand Cross of the Order of the Dannebrog; the Universities of Edinburgh, Aberdeen and Glasgow made him LL.D.; he became D.Sc. of the University of Wales, Fellow of the University College and Honorary Fellow of the Royal Society of Medicine. In 1903 he retired to a country house in Carmarthenshire and devoted his time and energy to setting up the Welsh National Library.

Mathews Duncan revolutionized the teaching and practice of gynecology and obstetrics in London and John Williams was his chief helper. He was a skilful but conservative operator. He became president of the Obstetrical Society in 1887 and in the transactions of the society there will be found most of the many papers that he wrote. The last years of his life were given up to the work of establishing a national Welsh library which is in the process of becoming one of the great libraries of the world.



Convalescent Barracks

National Soldiers Home Hospital*

LEONARD E. CROFT, M.D.
and DONALD G. BUSSEY, M.D.
Los Angeles.

This hospital, which is a part of the Pacific Branch of the National Home for Disabled Volunteer Soldiers, is located on a beautiful 860 acre tract in the foothills of West Los Angeles. It was established in 1888, by act of Congress approved March 2, 1887; the sixth of the ten branches now in operation. Those entitled to its benefits include, "All honorably discharged officers, soldiers, and sailors who served in the regular or volunteer forces of the United States in any war in which the country has been engaged . . . who are disabled by disease, wounds or otherwise. Also those who have been honorably discharged from the Army, Navy or Marine Corps of the U. S., necessitating treatment of service origin or not." Obviously there will be a large group of men who are disabled to an extent entitling them to admission, but not necessarily requiring care in the hospital.

We have some four thousand odd of this class at the Pacific Branch, and they comprise the personnel of the convalescent barracks or companies where lodging, meals, clothing, medical service, and various forms of entertainment constitute a share of what the "muzzle-loader," "bamboo," our "hero" may have "coming to him." We have twelve such companies here, three of which have daily visits by nurses and doctors, so that more gradual transition from hospital to activity is made possible. In addition a dispensary or "sick-call" is maintained every morning, and a doctor and an ambulance are subject to call anywhere in the camp, day and night.

*Under the direction of Col. James A. Mattison, F.A.C.S.

CAPACITY

The hospital has a capacity of over eight hundred beds including a new tuberculosis annex of three hundred beds. Fortunately a new eight hundred bed hospital is under construction at the present time, and the much needed space and improved facilities will be at hand within a few months. However, more about the new hospital a little later.

Our institution has been called, "An Old Soldiers Home"; we resent the appellation and deny the implication. Our hospital and convalescent barracks are not static but progressive, up-to-date and efficient, the purpose being to rehabilitate the chronic as well as the acutely ill. We are well equipped with the approved facilities essential to the practice of modern scientific medicine, staffed by medical officers of experience, and aided by consultants of recognized attainment.

An admitting office is maintained where examinations are made for the purpose of determining whether a patient is primarily a convalescent company case or one for immediate hospitalization. If he is in the latter class the patient is sent to the admitting ward where the physical findings are checked, and the routine examinations are ordered. These include Eye, Ear, Nose and Throat, Dental and

Laboratory surveys, as well as any necessary röntgenological work. The case is then referred to the indicated special department for final diagnosis and treatment.

The following departments are maintained: General medical, surgical, genitourinary, orthopedic, neuropsychiatric, eye, ear, nose and throat, and tuberculosis. With these should be included the x ray, laboratory and dental departments. When a case is referred from one department to another the findings are checked by the Assistant Surgeon[1] in charge and are then surveyed by the visiting consultant.

SURGICAL DIVISION

The Surgical department is under the direct supervision of the chief medical officer, Colonel James A. Mattison. A surprisingly low mortality rate obtains in view of the usual type of case met with in this service.

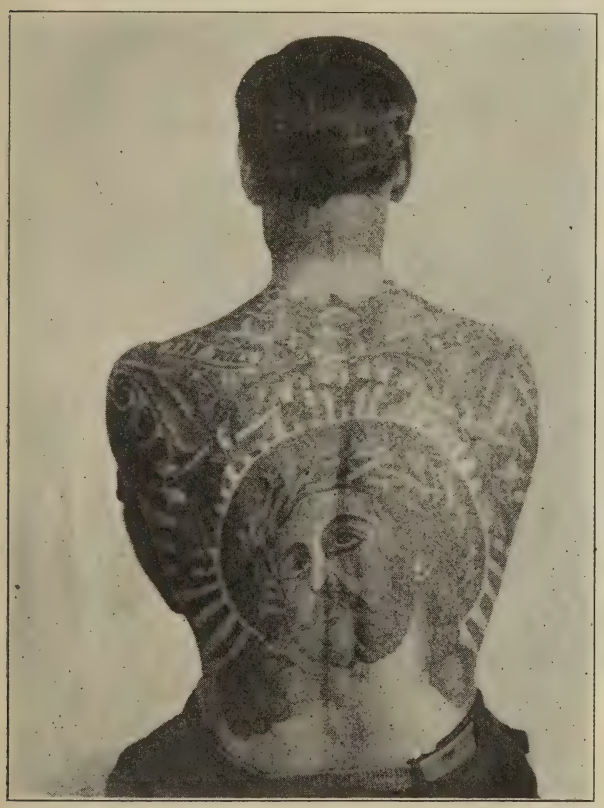


FIG. 1.—A tatooed man. A veteran of the Spanish-American War; tattooing was in style during World War.

The Medical department with the aid of our medical consultant, Major John William Shuman, F.A.C.P., has rendered a valuable service in the diagnosis and treatment of many obscure cases that have drifted from one hospital to another, the subjects of indefinite diagnosis and ineffective treatment. Practically all surgical cases are surveyed by the Medical department prior to operation. Every three months the Medical Staff hold a clinic for the Santa Monica Branch of the Los Angeles County Medical Society and visitors. Material for the same is not lacking. The accompanying photos give but a faint idea of pathological conditions which come to us. These, however, offered no difficulties in diagnosis. However, the lymphosarcoma man had previously been diagnosed, Hodgkin's disease. He died and was autopsied. All reasonable effort is made to examine after death and checkup the clinical diagnoses the

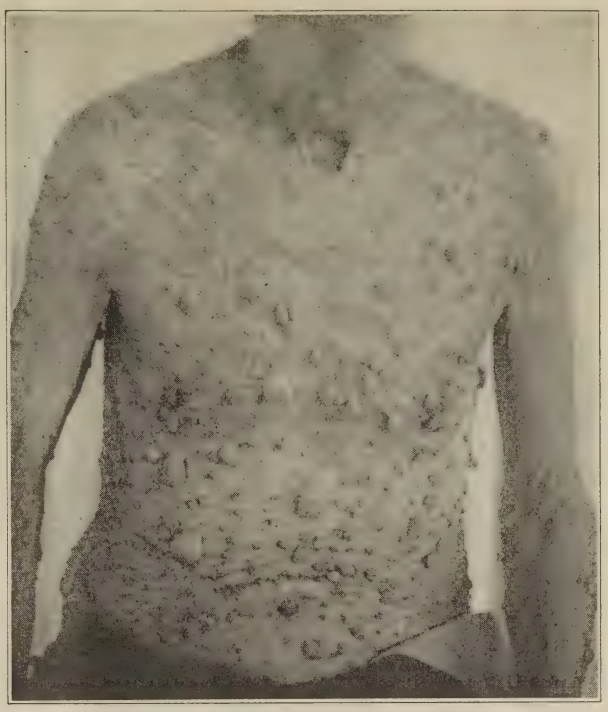


FIG. 2.—Civil War veteran. Multiple neurofibromata. Age eighty-two.

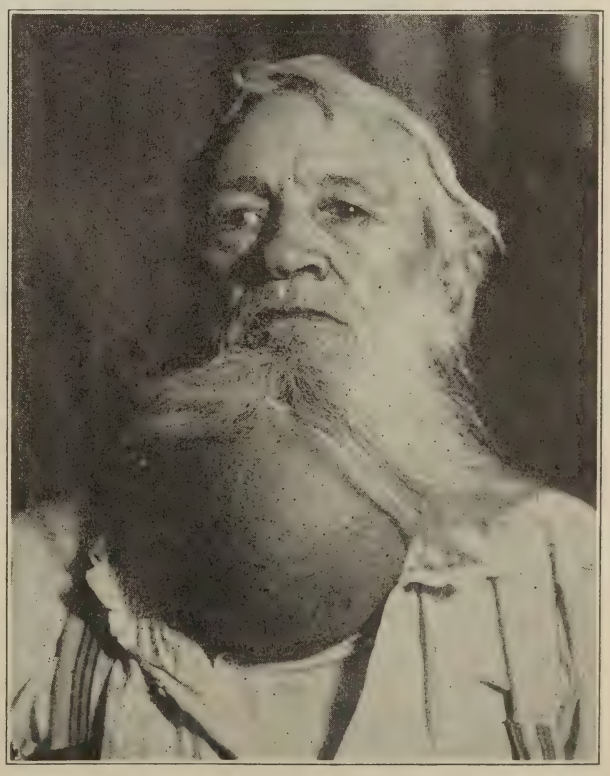


FIG. 3.—Civil War veteran. Cystic goitre.

[1]Assistant Surgeon, a title for all medical officers, excepting the surgeon in charge.

same as in any well organized up to date hospital, for the good of the Service.

The orthopedic department is proving to be one of the most valuable and popular departments in the general hospital service. As might be expected a large percentage of the disabled ex-service men suffer from disabilities of an orthopedic nature. As a result the orthopedic clinic under the supervision of Captain Charles Stephen James, F.A.C.S., is even at this late date still placing men disabled in the late war both figuratively and literally on their feet.

In an institution of this kind the genitourinary department plays an important part. Someone has said that our government hospitals are filled with syphilitics who have been badly treated. We have our share of advanced cases of syphilis, but we insist on accurate, careful, and adequate treatment. A blood Wassermann is a routine on all admissions. We do a considerable quantity of prostatic, kidney, and bladder surgery, with the assistance of consultant Dr. Leon J. Roth, and have adequate facilities to care for any type of genitourinary case by modern methods.

The scientific handling of the participants in the recent and other wars who require treatment for nervous and mental disabilities has been a problem. While we accommodate a limited number of such cases our facilities are entirely inadequate to take care of the demand. The neuropsychiatric department is merely a part of the general hospital and these patients are treated the same as all other sick people. Thus we avoid the stigmata of an asylum. Other advantages are the large convalescent barracks, and the fact that commitment is not necessary in order to treat our mentally ill cases. We are fortunate in having Dr. Paul Bowers as our consultant in this department.

Fig. 4.—Convalescent barracks No. 11.

The eye, ear, nose and throat department in addition to routine examinations on all admissions takes care of treatments and operations including refractions. Two clinics a week are held, one in opthalmology under the supervision of consultant Dr. F. A. Edwards, and one in otolaryngology under the supervision of consultant Dr. H. P. Merrill. Cases for operation are previously surveyed by the consultants.

The X Ray department, under the direction of Dr. R. C. Shawhan is most modern. The average number of films per month being between six and seven hundred. In this as in all other departments of this hospital wonderful opportunities are had to follow up our cases, diagnostically and therapeutically.

One of the important activities in our hospital is occupational therapy. It has been proven in many places that the period of hospitalization of many patients may be considerably shortened by the intelligent use of this splendid form of treatment. Naturally the relationship of the type of work to the patient must be carefully considered and selected, and this is done only by the ward surgeon in charge of the case. The work may be done either in the shops or at the bedside, and competent aides are at hand at all times.

The Physiotherapy department is large, and well equipped with all the modern proved equipment for carrying out this form of treatment to best advantage. It is under the direct supervision of one of the assistant surgeons, and assisting him are a number of well trained graduate physiotherapy aides.

In connection with the convalescent cases outside the hospital, a feature worth noting is the quarterly inventory of the health of all patients. Every three months those who have been in the institution for a period longer than that time are called before an examining board and given a careful examination in an effort to determine what can be done to speed up their convalescence. Cure rather than care is our aim.

In regard to the new million and half dollar hospital for general, medical and surgical cases: It is to be seven stories high, fireproof and modern throughout, including the "last word" in equipment. Work on the second story is going on at this writing.[1] A roof garden will afford ample opportunity for heliotherapy. The grounds adjacent to this new building are being surveyed for a nine hole golf course.

Society News and Notes.

The Wisconsin Antituberculosis Association is issuing a series of interesting little pamphlets on Great Physicians as Benefactors of Mankind. The purpose of the leaflets is to supply to high school teachers authoritative historical and scientific data which is usually unavailable outside the medical libraries.

* * *

The International Association of Medical Museums is preparing for publication as Number 9 of its Bulletin, a memorial volume of Sir William Osler. This will include many personal and biographical articles reminiscent of his life and activities during his career, written by intimate

[1]April 8, 1926.

friends and associates. The volume will be elaborately bound and fully and handsomely illustrated.

* * *

Mr. Homer Folks, a member of the public health council of the New York State Department of Health, has been honored by the *Better Times* medal for distinguished social service in New York.

* * *

The Union Memorial Hospital, Baltimore, received $25,000 by the will of Mr. John S. Gittings, of Baltimore.

* * *

The will of the late Gustav Ulbricht provides $2,000 for the Pasavant Memorial Homes; $50,000 for the New York Association for Improving the Condition of the Poor, and $25,000 to the Cornell University.

* * *

The Sharon Sanatorium, Sharon, Massachusetts, and the Central New England Sanatorium and Tumor Colony, Rutland, Massachusetts, received $150,000 by the will of the late Mrs. Thomas O. Richardson.

* * *

One thousand dollars was bequeathed to St. Joseph's Home for the Blind, Jersey City, by the late Nellie Lynn, of Philadelphia.

* * *

The New York Skin and Cancer Hospital received $300,000 as a contingent bequest from the estate of the late Ralph Holden.

* * *

The Memorial Home for the Blind, Worcester, and the Perkins Institution for the Blind, Watertown, Massachusetts, each received $5,000; the Home for Aged Women, the Home for Aged Men, Associated Charities, Worcester Tuberculosis Relief Association, and the Worcester Soviety for District Nursing, each received $2,000 by the wil. of the late David Hale Fanning, of Worcester.

* * *

One thousand dollars was bequeathed to the Brooklyn Home for Consumptives by the late Grace Newman.

* * *

The will of the late Mrs. Mary de Silver Lord provides $2,500 for St. John Guild's Seaside Hospital, New York, and $10,000 for St. Bartholomew's Hospital, New York.

* * *

By the will of John McCaffery the Hospital of St. Elizabeth of Hungary, New York, received six thousand dollars; the New York Society for the Relief of the Ruptured and Crippled, the Servants for the Relief of Incurable Cancer, St. Vincent's Hospital, New York Ophthalmic Hospital, Manhattan Eye, Ear and Throat Hospital, New York Cancer Hospital, Metropolitan Throat Hospital, French Hospital, St. Joseph's Hospital, each received seventy-five hundred dollars.

* * *

The late Mary E. Russell provided thirty thousand dollars for The Massillon City Hospital, Massillon, Ohio, in her will.

* * *

The Babies Hospital, of New York, and Columbia University each received twenty-five thousand dollars by the will of the late Dr. L. Emmett Holt.

* * *

The will of the late Miss Elizabeth D. Barclay, whose estate amounted to about two hundred thousand dollars, contained bequests to endow beds in hospitals, and bequeathed a share of the residuary estate to the Philadelphia Orthopedic Hospital for the purchase of appliances and instruments for the care or comfort of deformed or crippled children.

* * *

The New York Tuberculosis Association has for distribution a pamphlet entitled *Getting the Most Out of Your Cure.*

* * *

The Jewish Hospital, Association and Federation of Jewish Charities, Philadelphia, each received twenty-five thousand dollars, under the deed of trust created by the late Benjamin W. Fleisher.

* * *

Under the will of the late Mrs. Mary Clark, the Woman's Hospital of New York will receive three hundred thousand dollars direct; also a contingent bequest of approximately $1,270,000 from the same source.

* * *

The Coatesville Hospital, Coatesville, received five thousand dollars by the will of the late Miss Charlesanna L. Huston, Germantown, Pennsylvania.

* * *

Frederick Brown has donated one hundred thousand dollars to the Jewish Hospital of Brooklyn.

* * *

The will of the late Dr. Julius Rudisch provides, in a contingent bequest, that his estate of "more than $50,000" shall ultimately be divided between the New York Physicians Mutual Aid Association and Mount Sinai Hospital, of New York.

* * *

An anonymous donor has given $250,000 to the London Hospital to aid in paying salaries to research workers. There is to be an annual scholarship of $500 open to students from Oxford and Cambridge; a research scholarship of $2,000 a year, tenable for three years; the remaining sums to be divided between two senior pathologists. The two present holders of the last are Dr. S. P. Bedson of the Lister Institute, and Dr. W. Howard Florey of Cambridge University, engaged in this country with the Rockefeller Foundation.

* * *

The American Red Cross has recently announced that first aid and life saving instruction will be repeated at eleven different places in the United States as part of its National Water Safety Campaign. Among the instructors will be a number of well known athletes, both men and women, and various heads of physical education departments throughout the country. The New York course will be given, June 16th-26th, at Camp Matinecock, Tuxedo.

* * *

The Bureau of Clinical Information of the New York Academy of Medicine has now in press a booklet entitled *Opportunities for Clinical Study in New York Hospitals.* This constitutes a revision and expansion of the book of fixed clinics published for several years by the bureau. The new booklet will contain maps of the city and directions for reaching its hospitals. Special features and activities of interest to visiting physicians will be indicated, and opportunities in filling general and special internships, clinical clerkships, fellowships, and assistantships will be described. A list of graduate courses, clinical conference and clinics, with dates, places and time, follows.

* * *

Dr. Genil-Perrin, secretary general of the *Ligue Française d'Hygiène Mentale,* contributes an interesting article to the May number of the *World's Health* outlining the history and activities of the International Organization for Mental Hygiene. The writer makes a forceful plea for pushing mental bygiene throughout the world as a part of public health programs, addressing his remarks particularly to the League of Red Cross Societies because of their peculiar fitness to inaugurate and carry on such work, and because, through their central secretariat, they might plead the cause of mental hygiene before the League of Nations. He advocates, 1, That the Red Cross Societies include mental hygiene in their public health programs; and, 2, That the League of Red Cross Societies take part in the international organization of mental hygiene, and that it establish a new international secretariat for this purpose, if and when funds adequate for its continued and active maintenance are obtained.

* * *

The Save the Children Fund International Union has ceased publication of its *News Bulletin* and its supplement entitled *Salvate Parvulos,* and has substituted for them the publication of the *Revue Internationale de l'Enfant.* An editorial in the first number states that the chief aim of the new review will be to establish a liaison between child welfare specialists in different countries. It will publish original articles and news in English, French, German, Italian and Spanish.

* * *

The recently issued annual report for 1925 of the American Red Cross describes its work done in the alleviation during the year of 61 domestic disasters, 50 of which were what are tabulated as major calamities. Of these 18 were fires, 12 tornadoes, and 9 floods. A total of 46,098 persons received relief during the year.

Book Reviews

MATERIA MEDICA AND THERAPEUTICS

Potter's Therapeutics, Materia Medica and Pharmacy. Fourteenth Edition. Revised by R. J. E. Scott, M.D. Philadelphia: P. Blakiston's Son & Company, 1926.

It is regrettable that new edition of books on materia medica and therapeutics are so frequently not deleted of ancient useless drugs and more useless and ridiculous prescriptions. Textbooks on the subject of therapeutics are practically the only textbooks that are not kept up to date. The reviser of a book on materia medica and therapeutics, if he was the original author, seems to find it very difficult to cut out what he has said in his previous editions, so he keeps the old material and adds the new, making a book of historical therapeutics instead of using the scissors and offering a book of the best drugs and up to date advice for their use. We still bend the knee to the mystery of something that was once said to cure.

In the present instance the author of this edition is not the original author or the author of the previous editions. Hence without personal anguish he could have been lavish with his deletions. The older books can well be left for reference to old valueless drugs and treatment. Let the new books discuss modern treatment only, else the reader and student is befogged and wearied.

In his preface Dr. Scott says he has deleted "much obsolete matter and a number of the older prescriptions." He did not go far enough. The book is arranged alphabetically for reference. Part I, devoted to drugs, comprises pages 59 to 513, and the discussion of the action of drugs is excellent. The advice as to the therapeutic use of alcohol is correct. Medical men should not bend the knee to prohibition cranks. Also, there should be no laws that decide the dose of alcohol that a physician shall prescribe, any more than should there be a law declaring what dose of morphine or quinine it is allowed the physician to give. It would seem well to have more discussion of the endocrine gland extracts.

There is no attempt to follow the United States Pharmacopœia in giving the doses in the metric system. All the doses are in the old system. When will books and hospitals accept and teach the scientific decimal dosage? Most every hospital still has its "so many grains to the ounce" of nitrate of silver and "so many parts to the thousand" of corrosive sublimate.

Electricity, etc., is discussed in alphabetical order, many forms under "E." There is a fine discussion of sera and vaccines.

Part II is devoted to pharmacy and prescription writing, in which are perpetuated many old and ancient prescriptions. Who now puts nitric acid and hydrochloric acid into a bath? A prescription for this appears on page 548. There is also a prescription for a sulphur bath which includes precipitated sulphur and dilute sulphuric acid. On page 550 is a prescription for an "Electuary for Piles," and also one entitled "The Chelsea Pensioner." On page 556 are two prescriptions for gargles, one containing ammoniated tincture of guaiac, compound tincture of cinchona and honey, which, it says, should be well agitated and to which should be added potassium chlorate and water. Another contains alum, pomegranate bark, petals of red rose and honey, made up with boiling water. On page 559 is a prescription for a liniment that is not safe. It contains tincture of aconite, tincture opium, tincture arnica, chloroform, and soap liniment. One wonders if any oculist would use the following collyrium (page 560), which contains zinc sulphate, iron sulphate, copper sulphate, and alum in distilled water. One wonders how a child could be made to take the following prescription (page 564): powdered sulphate of quinine 1.5 drams; powdered acacia 1.5 drams, in syrup of ginger 4 ounces, a teaspoonful thrice daily. One would wonder just what this "paint" was at (page 565): tincture of iodine, ether, tincture aconite, fluid extract of belladonna root, morphine, iodine. Hardly believe we need Hooper's female pills, containing eight ingredients (page 570). Also one wonders why a pill (page 571) containing strychnine, arsenic, belladonna, quinine and iron is entitled "a tonic pill for women." How could it hurt a man? The prescription for catarrh powder which contains morphine is inexcusable (page 572). "Wade's bougies" (page 575) containing iodoform, bismuth, chloral, morphine, oil of rose, gelatin, and glycerin is of course ridiculous. Why insult oil of rose in an iodoform mixture?

Part III is devoted to special therapeutics also arranged alphabetically, and the previous author and the present author have seemed unwilling to delete anything; much of the advice is good. But (on page 596) who would ever administer dilute nitric acid in tincture of calumba and water for aphonia? One third of a page only (597) is devoted to the management of apoplexy, and prescriptions for tincture of aconite and croton oil are listed. Of course they might be indicated. On page 604 Bartholow's prescription for cigarettes to be dipped in an arsenic solution should be deleted.

It is hopeless to endeavor to discuss pro and con all the drugs, past or present, used in the treatment of a disease. A therapeutic book should outline or recommend the best modern treatment. As an instance of this futility of discussing everything (even quoting some old authority) note under the title of pneumonia the use of the following drugs are briefly discussed: creosote, creosotal, guaiacol, duotal, quinine, salicylac acid, aconite, veratrum viride, camphor, strychnine, digitalis, phosphorus, belladonna, tartar emetic, antipyrin, opium, ammonium carbonate, turpentine, serpentaria, potassium iodide, ammonium iodide, ethyl iodide, sodium iodide, ipecac, senega, sanguinaria, adrenalin extract, serum treatment, alcohol and oxygen. Reference is made to physical treatments, including blisters, cupping, poultices, wet packs, etc.

How can the subject of cancer be discussed in one and one fourth pages! Everyone knows that opium will stop pain, but does arsenic internally diminish cancer pain and check vomiting? Should ten grains

of chloral be given three times a day for the pain of cancer?

Is cerebral anemia (page 624) a disease? For this condition is recommended arsenic, iron, amyl nitrite, nitroglycerin, chloral, asafœtida, valerian, and serpentaria. Why the platitude that "strychnine stimulates the circulation generally"? On page 624 arsenic is recommended for cerebral anemia, and on page 625 it is recommended for cerebral congestion. What is "cholera simplex"? (page 631). The treatment recommended is camphor, salol, copper salts, arsenic, chloral, morphine, lead, calumba, ipecac, and cajuput oil. On page 665 thirty-five drugs are mentioned for use in dysmenorrhea, including arsenic.

Again the reviewer asks, why can not books on therapeutics be made modern as are textbooks on other subjects?

FRENCH MEDICINE

Précis de Pathologie Medicale. Tomes I and II. Par Fernand Bezancon et Andre Philibert. Paris: Masson et Cie., Editeurs, 1926. Pp. 539 and 646.

It is very unfortunate that the average physician in America does not read French. For many years, and greatly to its profit, American medicine followed very closely upon German traditions, but there is a peculiar quality in the teachings of the French school —a quality of cleanness, sanity, and common sense, which is sometimes missing from the German, and the whole mental approach is different. Any physician who wishes to practise his French, or any intern who has evenings not occupied by patients, can most profitably read these two small volumes of condensed medical text, which lie midway between the quiz compend, that invaluable aid which has enabled many a third grade student to escape the mortality of the examination hour, and the large system of medicine, which contains so much that it can only be used for occasional reference. These little books are short, beautifully written, well illustrated, and profitable for anyone to whom the language is not a complete bar.

AUTOBIOGRAPHY OF A COUNTRY DOCTOR

Sixty Years in Medical Harness, or The Story of a Long Medical Life, 1865-1925. Illustrated. By Charles Beneulyn Johnson, M.D. New York: Medical Life Press, 1926. Pp. 333.

This informative and entertaining volume is dedicated to "that ever serviceable but now vanishing member of the medical profession, the old time family doctor." Perhaps a citation of the author's foreword will serve better than anything else to give an idea of the contents of his book. "Sixty Years in Medical Harness," he writes, "is a simple narrative of the experiences and observations of an everyday country doctor who, on the one hand has endeavored to be as frank in naming his mistakes and failures, as on the other to note some of his successes and achievements. During the period covered by this narrative, namely, the last third of the nineteenth century and first quarter of the twentieth century, a complete revolution has occurred in the science and art of healing, due to the many advances and discoveries in the field of medicine. To keep pace in some measure with this revolution, and to take note of the various advance and discoveries, has at all times been in the mind of the writer, but despite his ideals he is conscious that much that he has written will not measure up to the highest standards, and for this and the narrative's many other shortcomings the writer craves the generous forbearance of the reader."

Thus simply, sincerely, and over modestly the doctor tell his tale, from which it will be possible to quote only a few of the very interesting and often humorous passages with which it is replete. In 1868 Dr. Johnson started his medical career in the village of Chatham, Ill. "As there was no one in the little town who had the skill to paint a sign for me, I proceeded to cut with my pocket knife the letters of my name from pieces of a cigar box, and these, when glued onto a board, and painted over, looked quite artistic. No one but an expert in such things would ever have believed this to be the work of an amateur!

"I shall never forget my first patient, his name was Phelps, and he had hematuria, and received a good deal of treatment from me before he finally recovered. However, for all my pains and trouble I got nothing, as he was a member of the great family of Dead Beats, whom doctors have reason to know so well."

Besides these entertaining personal and autobiographical bits which add so greatly to the entertainment of the reader, *Sixty Years in Medical Harness* is an excellent history of medical conditions and progress through the years covered, namely, from the time of the Civil War to the present time, and also a document of unusual value on the social life and social conditions of the same period. Some of these more serious chapters are entitled Medicine in 1868, How People Lived in the Sixties and Seventies, A Veteran Medical Society and Some of Its Characters (the Æsculapian Society of the Wabash Valley), Medicine in the Eighties and Nineties, The Alcohol Problem, Tuberculosis, My Medical Library; Grip, the Great Pandemic of the Late Eighties and Early Nineties; Flu, the Great Pandemic of 1918-19; and Medical Societies. The volume contains a number of reproductions of portraits of early physicians, which are extremely rare.

Dr. Victor Robinson in his introduction to the volume outlines this octogenarian autobiographer's work and character in a very telling manner. In speaking of some letters recently received from him, Dr. Robinson writes: "They are so human and humorous, they exhibit such mental balance and physical vigor, that it is difficult to believe they were typed by fingers which first touched the world over eight years ago—Dr. Johnson as a rule is his own stenographer. . . . The entire autobiography is written in a frank, simple and sincere style, and constitutes a valuable contribution to the medical history of the period."

BIOLOGICAL TABLES

Tabulæ Biologicæ. Volume II. Edited with the collaboration of 90 contributors by C. Oppenheimer and L. Pincussen. W. Junk, Berlin 15. 4 Bände—mit ausführlichem Index—in Lexicon-Octaa, umfassend uber 2000 Seiten auf holzfreiem Papier mit zum Teil colorirten Tafeln und zahlreichen Text-Figuren.

For a long time there has been in existence very complete sets of tables of physical standards, but there has been lacking a similar collection of chemical and physical observations whose interest is chiefly for the biologist. This want is being met by the *Tabulæ*

Biologicæ, volume 2 of which has just appeared. This includes many data concerning the thermochemistry of living creatures, a large section on the physical chemistry of the ferments, data on radiation, including light, x ray, and radium, and a long series of tables grouped under biophysics, but containing a most varied assortment of observations, from nerve-muscle reactions to the influence of position on the leucocyte count. The book is one which will inevitably be found on the shelves of every laboratory of pathology and biochemistry.

CORNELL UNIVERSITY REPRINTS

Cornell University Medical Bulletin. Volume XV, Number 2, October, 1925. Published by Cornell University, 477 First Avenue, New York City.

This volume contains reprints from the Department of Medicine of Cornell University collected during 1924-1925, which combine to make an extraordinarily interesting ensemble. A fair share of the papers is devoted to the study of various aspects of diabetes and metabolism. A good many of these have already been abstracted in the MEDICAL JOURNAL AND RECORD.

Medicoliterary Notes.

During Germany's health week, which extended from April 18th to 25th, the press, stage, screen, platform and pulpit aided in passing on education to both young and old in matters of personal and public health. Mother Goose even was requisitioned to do her bit by supplying illustrated passages encouraging the young to brush teeth, wash necks, go to bed early, and do other hygienic things.

* * *

Giovanni Papini, author of the *Life of Christ* which aroused such a sensation when it was published, is reported to be preparing a new book with a Biblical basis, which is to be called *Adam,* and which will embody Papini's views on the creation of the world. The author is said to be working also on an opera to be entitled *The Discovery of the World.*

* * *

The issue for December 18, 1925, of *Public Health Reports,* gives the prevalence of notifiable diseases in the various states during the year 1924. The number for December 25 contains the tenth revision of the United States Pharmacopoeia.

* * *

Insulin is derived from the pancreas of freshly killed animals, but it is not confined to pancreas alone. It is found, for example, in the muscular tissues, although in relatively minute quantities. Professor Brugsch, of Berlin University, discovered that insulin is widely distributed among living organisms, including plants, especially where starch is formed. Professor Brugsch then tried to discover the method by which the vegetable insulin could be extracted. He has been successful, and insulin extracted from acorns by his method is ready to be placed upon the market. This vegetable insulin will be concentrated in tabloid form so as to be taken perlingually. . . . Tabloids of highly concentrated insulin, known as insulingual, from the pancreas of animals have been on the market for some time, but the price is almost prohibitive; insulin derived from acorns by Professor Brugsch's method will be exceedingly cheap.—*Manchester Guardian Weekly.*

* * *

The woes of an organist in the village of Steeple Barton, Oxford, have been considerably lessened by the removal from the church organ of a swarm of bees and thirty pounds of honey, three umbrellas and a number of carefully written sermons.—*N. Y. Evening Post.*

* * *

As a part of a determined war to oust mosquitoes, British sanitary authorities have established along a strip of the south coast from Poole to Brighton more than seventy collecting stations to carry out observations on the flight of the salt water mosquitoes which infest that district. The work is conducted as a part of the activities of the new Mosquito Control Institution at Hayling Island, which, when completed, will include a research laboratory, a demonstration museum, a photomicrographic room, a drawing office, and a workshop.—*Nation's Health.*

* * *

Neglect of precautions against fire in public institutions in the United States is indicated by the fact that during 1924 fire damage of more than $10,000 took place in each of 599 public institutions, the total loss being nearly $60,000,000, or about 10.3 per cent. of the nation's fire waste for the year.—*Greater New York.*

* * *

The twenty-second annual report of Bellevue and Allied Hospitals of New York City, and the fortieth annual report of Montefiore Hospital, New York City and Bedford Hill, have recently been issued.

* * *

At its recent annual meeting the Kings County Homeopathic Society elected the following officers for 1926; Dr. Royal A. Abbott, president; Dr. Herbert S. DuCret, vice-president; Dr. Farrand B. Pierson, second vice-president; Dr. Clarence J. Ohlbaum, secretary; Dr. Remick C. Eckhardt, treasurer; Dr. J. Alexander Stewart, necrologist; Dr. Charles A. Brown, Dr. George S. Ogden, Dr. Chester A. Peake, Dr. Walter S. Rink and Dr. Justus G. Wright censors.

* * *

Dr. William P. Healy, recently elected president of the New York County Medical Society, was guest of honor at a dinner given by the New York Celtic Medical Society at the Waldorf Astoria, on February 5th. Among the speakers were Judge Alfred J. Talley, Dr. Nathan B. Van Etten, Dr. Thomas H. Curtin, and Dr. Michael J. Horan, who presided.

* * *

A survey has just been completed by the Hospital Information Bureau of the United Hospital Fund which shows that the largest private hospital in New York City could not accommodate the out of town patients alone who are treated in the nonmunicipal hospitals in a year. The report states that "a study of the records of seven representative hospitals in Manhattan showed that twelve and four-tenths per cent. of all patients treated in 1924 lived outside New York City. This includes a large special hospital where twenty-five per cent. of the patients come from outside the city, attracted by its excellent reputation, as well as the down town hospitals, serving commuters mainly, where as high as 15 per cent. of the patients are nonresidents."

* * *

Titania's Palace, a toy house which it took more than twenty years to build, has been brought to this country by its builders, Lord Nevile and Lady Wilkinson, to be shown at the Philadelphia Sesquicentennial Exposition and later in the larger cities of the United States. The proceeds of its exhibition will be used for building a new wing for the London Hospital for Crippled Children. Titania's Palace, not to be confused with the Queen's Dolls' House, was built in Dublin and is filled with many tiny and exquisite samples of Irish craftsmanship.

* * *

The recently published report of an investigation states that engine drivers and firemen usually become gray between the ages of thirty and forty.

* * *

The fact that genuine diamonds, when exposed to ultraviolet rays "light up" and—to quote the words of a police expert—take on the appearance of "beautiful blue lamps," while faked diamonds remain lifeless and dull when subjected to the same test, has enabled the police in numerous instances to detect fraud and to set on foot inquiries leading to the early arrest of the diamond "fakers." The knowledge, too, that many aniline dyes "light up" vividly when exposed to ultraviolet rays has helped the Berlin police to track down burglars who, when getting away from a house after a robbery, had left behind threads which had been detached through the incidental rubbing of their clothes against doors or window frames. In such cases, where dyed materials are involved, it has been proved that a quartz lamp is more serviceable for purposes of examination than a microscope.—*Modern Sunlight.*

Abstracts from Current Literature

GASTROENTEROLOGY

The Fate of Sutures as Observed in Intestinal Anastomosis and in the Healing of Wounds.—Frederick Leet Reichert and Emile Holman (*Bulletin of the Johns Hopkins Hospital,* March, 1925) present a study of thirty-eight experiments in which Dr. Halsted's blind end circular suture of the intestine was performed, and further observations were made to determine the fate of sutures in the different types of intestinal anastomosis in common use. The results obtained emphasize the importance of gentleness and care in handling tissues. The authors state that silk sutures used in intestinal anastomosis migrate either to the peritoneal surface and are covered only by a transparent layer of endothelial cells, or to the lumen of the bowel, into which they eventually drop off and are lost. When the sutures do not enter the mucosa they migrate toward the peritoneum. If the mucosa is pierced they slough into the lumen. The presence or absence of infection along the stitch determines in which direction the sutures will travel. Absorbable material would seem to be superior when through-and-through sutures are required. The flange of inturned bowel soon disappears when trauma or soiling does not complicate, but persists, with long delayed fibrous healing when either or both of these factors are added. The degree of omental adhesions at the site of anastomosis is also dependent upon trauma and soiling. No difference was noted in the healing about a lateral anastomosis when a single row of interrupted mattress silk sutures or a double row of continuous catgut sutures was used. Sutures used in the closure of abdominal wounds, when applied so as to constrict the tissues which are included, invariably produce defects in the anterior sheath. Sutures applied so loosely as just to approximate the edges of the wound did not injure the tissues. The vertical figure of eight suture is better than the horizontal figure of eight. Simple vertical sutures are as efficient as the vertical figure of eight suture.

Extravasation of Bile.—Z. Cope (*British Journal of Surgery,* July, 1925) advises that the treatment of biliary extravasation is by operative measures. The bile must be allowed to escape from the peritoneal cavity so far as is possible, and any tension in the biliary passages must be reduced. In a patient who is very ill, merely drainage of the peritoneum and of the gallbladder is called for. If the biliary ducts appear normal and the bile appears to be escaping from the gallbladder, it is a natural procedure to remove the gallbladder, provided the patient's condition warrants it. Any stones in the common duct should be removed.

With the present late coming of these cases, however, the mortality is very great. Six out of ten of the patients mentioned in this paper succumbed. It is quite clear that the curing of acute abdominal disease depends chiefly upon early diagnosis.

Intussusception Due to Meckel's Diverticulum.—W. E. Lower (*Annals of Surgery,* September, 1925) offers two new cases of this unusual complication and reviews its symptomalogy as follows: 1. Repeated attacks of partial obstruction before the culminating attack which leads to surgical intervention, in some cases these repeated attacks being sufficiently mild and extending over a period of time to suggest chronicity. 2. Absence of blood in the stools. 3. Frequent lack of a palable tumor. 4. Lack of local tenderness.

The presence of a diverticulum and a beginning intussception should be suspected from these symptoms in young adults; and in older patients who have had recurrent attacks of right sided abdominal distress, with or without bloody stools or diarrhea; with or without a palpable tumor; with or without tenderness to the right of umbilicus. In such a case, if no other cause of the condition can be demonstrated, an exploratory operation should be performed, for provided a diverticulum is present the catastrophe of intussusception may occur at any time. If it is not present, no more harm is done by the exploratory operation than is done by the removal of the chronic appendix because of the presence of the train of symptoms which suggest a chronic appendicitis with the ever present danger in that case also, of an acute catastrophe. Moreover, just as the appendix is routinely removed in the course of an abdominal operation in order that the source of danger for the future may be obviated, it would appear well to consider whether or not one should look for a diverticulum in those cases in which an exploratory operation is performed for suspected appendicitis and the appendix is found to be normal.

Pancreatic Cysts.—H. Roth (*American Journal of Surgery,* Vol. XXXIX, No. 11) reports on two cases of this complication, discussing their etiology, varieties, and diagnosis.

Cysts of the pancreas require surgical treatment. Treatment by aspiration should no longer be practiced, nor is it necessary to do a two stage operation. Drainage through the loin may occasionally be indicated. If the cyst has a small pedicle it may be completely removed without much danger, but as a rule partial or complete excision of the cyst is rarely practicable or safe owing to the danger of hemorrhage from separating dense adhesions and the danger of injuring the pancreas. The safest operation and the one most suitable in the majority of cases is evacuation of the fluid and drainage through a laparotomy incision, after isolating the cyst from the free peritoneal cavity. The operation is done by exposing the bulging tumor through a median or lateral laparotomy. The cyst is exposed by dividing the various layers of peritoneum which lie in front of it.

These will vary according to which one of the three positions the cyst may occupy. If the cyst lies below the greater curvature of the stomach, the two layers forming the gastro colic omentum and the posterior parietal peritoneum have to be divided to reach the cyst wall. If the cyst lies below the liver and above the lesser curvature of the stomach, the two layers of peritoneum forming the gastrohepatic omentum and the posterior layer of the parietal peritoneum have to be divided. After the cyst wall is reached and the general peritoneum has been protected by flat laparotomy pads, the cyst is punctured, and the fluid is evacuated by suction. The puncture is enlarged sufficiently to permit complete emptying and inspection of the cavity. As much of the cyst wall as can be without danger should be excised. The edges of the opening in the cyst wall are then sutured to the anterior parietal peritoneum, thus marsupializing the cyst. A large drainage tube is introduced into the remaining cavity and the rest of the abdominal incision is closed in layers. If possible the drainage tube is connected with a bottle to protect the skin from irritation from the discharging fluid.

Frequent changes of dressing are necessary and the skin must be protected against irritation. The cavity is obliterated by filling up with granulations. Occasionally a fistula may persist for a long time, or after it is closed the cyst may reform. Roentgen ray treatment and an antidiabetic diet have been recommended to hasten closure of the fistula.

Gastroduodenal Ulcers.—W. M. Brickner and H. Milch (*American Journal of Surgery,* Vol. XXXIX, No. 11) present and discuss eight cases of different types of these ulcers, giving the following suggestions as to method of treatment:

In performing gastroenterostomy we do not turn or twist the jejunum to secure "isoperistalsis." Tracing it from its emergence into the peritoneal cavity at the fossa of Treitz, we merely bring the jejunum, without tension but also without a loop, directly over to the right for its attachment to a relatively non vascular site on the posterior wall of the stomach, near the greater curvature and about two and a half or three inches from the pylorus, which surface has been pushed through a tear made in the transverse mesocolon. We think it desirable to secure, by separate ligatures or by a whipstitch, cut vessels in both stomach and jejunum. The anastomosis is made with an inner Connell suture and an outer Cushing suture of chromicized catgut. To date, none of the patients upon whom we have ever performed a gastroenteric anastomosis has developed a jejunal or gastrojejunal ulcer, so far as we know.

In the matter of treatment of a fixed hour-glass contracture the obvious indication is to abolish the stenosis. This may be done either by performing a gastrogastrostomy, of the type suggested by Finney for pyloroplasty, or by resecting the portion of the stomach distal to the stenosis and then reestablishing the gastrointestinal continuity by gastrojejunostomy. In such a case as this, with a recurring ulcer, resection is much the better procedure.

In perforated ulcer we call attention to the employment of a suction apparatus to remove the fluid at operation. This is our routine practice in cases of peritonitis, ectopic pregnancy or other condition in which any considerable amount of pus, blood or fluid is to be dealt with. The procedure is more thorough and less traumatising than sponging. The Kenyon-Pool suction tip is inserted into one pocket after another, by the assistant, while the operator is engaged in dealing with the lesion itself. Suction evacuation is thus time-saving and therefore, in these often desperate cases, it is sometimes life-saving.

The operations proposed for perforated ulcer are: Simple suture, excision and suture (in either case reinforcing the line of closure by attaching omentum—especially if the tissues are friable), suture, or excision and suture and gastroenterostomy, and primary resection (usually pylorectomy). Closure of the opening and infolding by sutures is the most commonly performed operation; and the point most under discussion is whether or not gastrojejunostomy should be associated with this routinely.

Some surgeons urge that gastroenterostomy should be included in the operation; others equally earnestly advise that it should not be done as a primary procedure. We do not think either conclusion should be accepted as a hard and fast rule. When the performation is dealt with early, if there is little contamination of the peritoneum and the patient's condition is good, a gastrojejunostomy may be added without unduly increasing his hazard; and especially if, under these circumstances, the infolding appears to have greatly compromised the pyloric outlet the surgeon may well elect to include the anastomosis. When there is much soiling of the peritoneum and, especially, when there is evidence of peritonitis or and when, as is so often the case, speed is an important consideration, gastrojejunostomy adds too much to the patient's risk. The stenosis of the pylorus by suturing is seldom as great as it appears and, too, it soon yields; and if the need for gastroenterostomy becomes evident it can be done, more safely, later on, when the patient has recovered from his primary shock and the field is clean.

PEDIATRICS

Acrodynia.—F. C. Rodda (*American Journal of Diseases of Children,* August, 1925) draws the following conclusions from a clinical study of seventeen cases: Acrodynia is a disease of infancy and early childhood, which is preceded or accompanied by an upper respiratory infection and which presents three groups of symptoms in varying degrees and combinations: 1, general: anorexia, loss of weight, weakness; 2, nervous system: hyperirritability, sleeplessness, paresthesia, anesthesia, loss of reflexes, paresis, photophobia, and 3, dermatological: hyperhidrosis, miliaria, desquamation, erythema, swelling, cyanosis, coldness of hands and feet, alopecia, ulceration and loss of teeth. At first the condition was erroneously thought to be a deficiency disease, but it more probably is the result of a focal infection, usually in the tonsils and the adenoids. Although the dermatological findings are pathognomonic, the disease should be suspected in cases of unexplained, persistent hyperirritability and hyperhidrosis; removal of tonsils and adenoids at this stage may abort the disease. In the series studies, early recognition of the disorder and prompt removal of tonsils and adenoids has been followed by speedy recovery in all patients.

Van den Bergh Test for Icterus in Blood of Infants.—Clifford G. Grulee and Annette Mebane (*American Journal of Diseases of Children,* August, 1925) found that their results agreed quite well with those of other investigators who have studied the van den Bergh reaction in simple icterus neonatorum. Both from the umbilical blood and from the blood serum of the infant after the jaundice had developed only the indirect reaction was obtained. In three cases of jaundice in the course of acute respiratory infections, and in one case following the administration of neoarsphenamin, the reactions were all indirect, which findings agree with the contention of van den Bergh. In two cases of catarrhal jaundice only indirect reactions were seen; in one case of obstructive jaundice the results were so irregular as to be of questionable value. The evidence presented is such as to raise a doubt as to the value of the van den Bergh reaction as a method of differentiating between obstructive and non-obstructive types of jaundice in infants and in young children.

Rickets in Infants: Treatment with Irradiated Milk.—Benjamin Kramer (*American Journal of Diseases of Children,* August, 1925) reports that in a series of eight patients with active rickets, the administration of irradiated milk produced healing in every case. This was demonstrated at the end of the third week and was marked at the end of the fourth weak. The chemical changes in the blood following this treatment were identical with those previously reported, which followed the administration of cod liver oil to rachitic children or the exposure of such children to ultraviolet rays or to sunlight. Irradiated milk feeding induces a marked retention of both calcium and phosphorus.

The Roentgenogram in Early Scurvy.—K. F. Pedkan (*American Journal of Diseases of Children,* August, 1925) assert that the essential points in the roentgenogram of a well developed case of scurvy are the following: 1, A finely irregular, broadened, well calcified epiphyseal line; 2, a small spur at the lateral edge of the epiphyseal line; occasionally dislocation of the entire epiphysis; 3, an area of decreased density (scurvy line) immediately back of the epiphyseal line, which represents lack of calcification of the newly formed spongiosa; 4, a very thin cortex, often merely a narrow white line; 5, glasslike transparency of the shaft; no trabeculations as in normal bone or in rickets; 6, a broad, finely irregular white edge on the epiphyseal center of ossification of the long bones.

Less advanced cases of scurvy show practically all of the previously mentioned changes except the lateral spur of the epiphyseal line, which is apparently the las taddition to the scorbutic damage in the bones. The borderline case of scurvy usually shows only three of the characteristics before mentioned: the broadened epiphyseal line, the dense shadow around the center of ossification of the epiphysis and the absence of trabeculations in the shaft. The diagnosis of scurvy can with certainty be made on these three signs, even in the absence of the much abused scurvy line.

The author's conclusions are as follows:

1. The ground glass appearance of the shaft, which is due to the disappearance of trabeculæ, is an important and hitherto underestimated roentgenographic sign of scurvy.
2. We can support the claim that the edging of the epiphyseal centres is a constant and reliable sign of scurvy.
3. The combination of broadened epiphyseal line, edging of the epiphyseal centre and disappearance of trabeculations in the shaft is pathognomonic of this disease.
4. Scurvy can be diagnosed by the roentgenogram before any of the accepted clinical symptoms (pain, hemorrhagic manifestations) have appeared.

Avitaminoses in Breast Fed Infants.—Geza Petényi (*Monatsschrift für Kinderheilkunde,* August, 1925) states that avitaminoses may also occur in infancy with breast feeding, being most probably due to a deficiency of the D factor in the milk. This can be cured by the administration of minimal amounts of vegetables. Clinically, this takes the form of a retardation of development, followed possibly by a slight anemia.

When young eczematous and breast fed children do not flourish it is advisable to try the addition of small amounts of vegetables to the usual food. It is not proper to persist with an exclusive breast feeding in these cases, as there are cases in which the cause of the failure of development is not to be attributed to the exudative diathesis, but to the qualitative insufficiency of the mother's milk. The same claim also holds in the cases of retardation in debilitated or premature children.

Scarlet Fever: with Special Reference to Susceptibility as Determined by the Dick Intracutaneous Test.—W. A. Brown (*British Journal of Children's Diseases,* July-September, 1925) in the Grove Fever Hospital, London, gives some results obtained from testing 487 cases for susceptibility to scarlet fever using the Dick test.

Concerning the technic of the test the following methods were pursued. The skin on the anterior surface of the forearms was carefully cleansed with methylated spirit. Using

an ordinary hypodermic syringe and fine gauge needle. 2. c. c. of the diluted toxin was introduced intradermically into the left arm. As a control the same procedure was carried out on the right arm), 2 c. c. of the same dilution of toxin previously heated for forty-five minutes at 95° C. being used. Upon commencing investigations a practice was made of observing the reactions at various periods from six to thirty-six hours after injection. Although in some cases the reactions could be interpreted accurately at the end of twelve hours, the author found that the best time for reading results was twenty-four hours after injection. Positive reactions usually began to appear in from eight to twelve hours, reaching a maximum intensity in twenty-four hours and subsequently fading rapidly. At the end of forty-eight hours from the time of injection nothing was visible, except in a few cases which gave strongly positive reactions, and in which the area of redness was faintly visible after forty-eight hours. In all the cases tested with 1:6000 dilution swelling only occurred once and pain was never present. Desquamation was also absent, except in some cases mentioned in the paper. Pseudoreactions were not very common. In the first 430 cases tested a 1:6000 dilution of toxin was used with a corresponding control. Subsequently, a 1:1000 dilution was employed in a further series of tests.

The body of the experiment pointed to various conclusions. 1. The Dick intracutaneous test is an index of susceptibility and immunity to scarlet fever. 2. When a patient, who gives no previous history of disease, shows a wellmarked positive skin reaction, there is strong presumptive evidence that his or her immunity to scarlet fever is slight or absent. 3. The Dick test is a valuable aid to diagnosis, and a strongly positive skin reaction in the first 48 hours of a scarlatiniform eruption would lead one to hesitate before making a diagnosis of scarlet fever. 4. When a patient, who has recently shown a positive Dick reaction, develops a scarlatiniform attack, the reappearance of the red area at the site of original inoculation is confirmatory of a diagnosis of scarlet fever. The observation of Zingher was not confirmed that an area of pallor appears at the site of previous injection in a positive reactor who contracts the disease. 5. The results of the test demonstrate that age susceptibility is highest at a period before the children commence to attend school, whereas age incidence is greatest during the first few years of school life. This shows that immunization if adopted as a prophylactic measure in State medicine, should be carried out in the first few years of life. 6. The well recognized fact that an attack of diphtheria increases the patient's susceptibility to scarlet fever is confirmed by the test. 7. The use of different dilutions of toxin may show widely divergent results. The use of a 1 to 6,000 dilution of toxin seems to underestimate the susceptibility, while the use of a 1 in 1,000 dilution tends to over-state the incidence. 8. A more reliable method of standardizing the toxin is necessary in order to obtain a uniformity of results. 9. Further investigations to elucidate the nature of the atypical forms of scarlet fever are necessary before a satisfactory explanation can be proffered of some of the apparently anomalous results of the test in this type of case.

The investigator offers some suggestions for improving the present technique of toxin standardization, namely, the use of a standard strain of streptococci procured from typical scarlet fever patients. The growth of this strain for a definite time on definite media. The employment of a standard method of preparing the toxin from these cultures. The adoption of a definite clinical conception of what is to be regarded as scarlet fever.

A Comparison of the Kahn with the Wassermann Test.—Mildred H. Faupel (*Bulletin of the Johns Hopkins Hospital,* September, 1925) reports the results on four hundred patients in which the Kahn and Wassermann tests were done in parallel. For the latter test, a cholesterinized beef heart antigen was used, and in the majority of cases, waterbath fixation, the rest being in the icebox. Of these, 90.2 per cent. showed absolute agreement, 3.8 per cent. good relative agreement, 5 per cent. partial agreement, and 1 per cent. absolute disagreement. The coefficient of correlation for the whole series was found to be 0.79. The method is comparatively simple and the reaction is completed within five to thirty minutes after mixing serum with antigen. The test is of especial value in cases in which the rapidity of obtaining results is an important factor. The test has not been found applicable to spinal fluids by the author.

Brain Tumors in Children: Their General Symptomatology.—MacDonald Critchley (*British Journal of Children's Diseases,* December, 1925) discusses the general symptomatology of brain tumors in children, without touching on questions of differential diagnosis, localization, prognosis or treatment. The paper is based on a fourteen year contract with admissions to the National Hospital, Queen Square. Only those cases are included of tumor occurring in children before the seventeenth year. Dr. Critchley finds the phenomenon of remission particularly characteristic of tumors occurring in childhood and believes it to be suggestive of tuberculomata situated in the pontocerebellar regions.

Intrathoracic Tumors in Children.—Hugh L. Dwyer and Ferdinand C. Helwig (*American Journal of Diseases of Children,* December, 1925) report an interesting occurrence of intrathoracic osteochondrosarcoma in a boy aged twelve years. The tumor originated from the inner aspect of the fifth rib, almost filled the right thoracic cavity, producing atelectasis of the right lung and displacement of the heart and mediastinal structures.

Effect of Prepuberty Castration on Subsequent Cancer Implantation.—James B. Murphy and Ernest Sturm (*Journal of Experimental Medicine,* August, 1925) state that male and female mice castrated during the first seven weeks of life and implanted with cancer at later periods show a resistance definitely higher than do intact animals of the same age. This increased refractiveness is evident at three months after the operation but is more pronounced at eight months to a year. Even castration in early adult life seems to increase the refractory state to later cancer inoculation. On the other hand, adult mice inoculated within a week after castration show slight if any evidence of marked increased resistance.

Dick Test for Susceptibility to Scarlet Fever.—Claude B. Ker, J. E. McCartney, and J. McGarrity (*Lancet,* January 31, 1925) find that there appears to be no difficulty in obtaining hemolytic streptococci from the throats of patients in early cases of scarlet fever, from which may be prepared filtrates which, when suitably diluted, may be safely injected intradermally and which cause a local reaction in persons who are presumably susceptible to scarlet fever, or who are actually suffering from its early manifestations. This reaction is not liable to occur in the vast majority of persons who have already had scarlet fever, and in scarlet fever patients tends to become negative as convalescence advances. As regards those individuals who, not having had scarlet fever, nevertheless give negative reactions, it may be assumed that they have, as in the case of diphtheria, acquired immunity by exposure to subinfective doses of virus at some previous period of their existence.

The chief difficulty at present is to standardize the toxin. If it is too weak the results will be reliable, the proportion of positive reactions being unduly low, as the authors found in their series of cases. This difficulty can to some extent be overcome by carefully comparing the results of different filtrates on known human reactors. It is probably wise, when a satisfactorily acting filtrate is obtained, to use it exclusively. In the hands of the authors, this precaution promises to bring better results in the future.

Antitoxin Intraperitoneally.—Joyn A. Toomey, Otto L. Goehle and Carl C. Dauer (*American Journal of Diseases of Children,* February, 1925), compared fifty cases of diphtheria treated by intraperitoneal injection with other methods of antitoxin in administration. They found the intraperitoneal injection method a safe and simple one. They showed that antitoxin may be used intraperitoneally, just as it is received from the commercial house, undiluted with saline solution. This method of injection is not recommended for all cases of diphtheria, but it seems to be the method of choice in cases of toxic myocarditis where the shock associated with intravenous injection might very well be avoided by intraperitoneal injection, and in infants and children who have had diphtheria for more than two days and who have poor veins. It is a comparatively safe method, but proper surgical precautions must be practiced before puncturing the peritoneum. The authors have followed Blackfan's technic.

PHYSIOTHERAPY

Quantitative Data in Tissue Reactions to Ultraviolet Radiations.—P. R. Peacock (*Lancet,* August 22, 1925) draws the following conclusions from his experiments:

1. Since the skin surface is rendered visible by fluorescence, when only the invisible ultraviolet rays fall upon it, it is obvious that a greater or less amount of the incident rays is being dissipated at the skin surface as light and is consequently incapable of acting on any deeper structures.

2. Since fluorescence commences directly the skin is exposed to ultraviolet rays, whereas pigmentation only occurs as a result of considerable exposure, it is logical to suppose that, in fluorescence, we have a more immediate protection from excessive radiation, as far as ultraviolet rays are concerned, than in pigmentation.

3. Since all the fluorescent substances examined, as well as the melanin which causes pigmentation, show marked absorption of ultraviolet rays, and since fluorescence and pigmentation always seem to vary inversely to each other, it might be interpreted that pigmentation marks the failure of fluorescence to protect the structures of the cutis vera from excessive radiation. This is substantiated by the experiments on artificially increased fluorescence, where no pigmentation follows exposure.

4. If pigmentation of the patient is aimed at as a standard of successful treatment, this is tantamount to producing deliberately in the patient a natural and efficient protection against the very source of treatment employed.

5. The pigmentation must be regarded as an indication that the penetration of the rays has not been prevented by fluorescence at the skin surface. If pigmentation could be avoided without hindering the penetration of the rays to the cutis vera it might prove more beneficial.

6. By employing the maximum dose which will on each application just fail to produce pigmentation, and, by separating the exposures by the minimum time interval necessary to avoid the cumulative effect, it should be possible to get equally good, if not better, therapeutic results in a shorter time.

Therapeutic Value of Light.—C. E. M. Jones (*British Medical Journal,* September 19, 1925) states that artificial light treatment is employed as a substitute for heliotherapy when natural sunlight is not available, either owing to climatic conditions or when suitable sites for the use of heliotherapy are lacking, as in congested areas in large towns. Much valuable work is done in light clinics by giving artificial light baths to rickety, debilitated, and pretuberculous children. In the treatment of nonpulmonary tuberculosis artificial light treatment differs from heliotherapy in one important particular. Whereas in heliotherapy it is the general effect of light that is important as compared with the local action, in the artificial light treatment of these cases the part played by local treatment is of far greater importance, though here also it should always be combined with general treatment.

Either the carbon arc lamp or some form of mercury vapor lamp may be used. Each has its advantages. The former more closely resembles natural sunlight, and possesses greater power of pigmentation than the mercury vapor lamp. On the other hand longer exposures are required. A commencing dose of twenty minutes to a half an hour might be given with a carbon arc lamp, whereas three minutes with a mercury vapor lamp would suffice. The arc also gives out a fairly considerable amount of heat, which is apt to become exhausting to young or debilitated patients, and therefore the mercury vapor lamp is sometimes preferable. The author prefers the arc for the purpose of general light baths. The arc lamp may also be employed with caution in the treatment of cases of the nonpigmenting type which cannot be exposed to natural sunlight. The cases will often acquire a certain amount of pigmentation, the protective action of which will enable them to tolerate some exposure to natural light, with its corresponding benefits.

Cases of lupus, scrofuloderma, skin tuberculosis, glands in the neck, sinuses, etc., are greatly benefited by the local treatment by light relatively rich in ultraviolet rays. Lupus in the ulcerative stage is advantageously treated by the mercury vapor lamp; when the ulceration has healed the treatment must be completed by the Finsen-Ryen lamp, which is usually essential for the final eradication of the disease. Scrofuloderma may be treated by the mercury vapor lamp or the tungsten arc; skin tuberculids by the mercury vapor lamp; glands in the neck, more especially those of a multiple nature and accompanied by periadenitis, are greatly benefited by the tungsten arc. The Kromayer water cooled mercury vapor lamp is useful in certain stages of the treatment of lupus. The quartz rod applicators are very helpful in the treatment of lupus in such situations as the interior of the nose, the gums, rectum, vagina, etc. There is an advantage in the combined general treatment with all forms of local light.

Light treatment is contraindicated in nonpigmenting persons, in pyrexial cases of marked amyloid disease, the acutely ill, the very young and the aged. In unsuitable cases the light treatment produces depression instead of stimulation. Depression is also produced by overdoses in cases otherwise favorable.

Intratracheal Use of Iodipin for the Röntgen Diagnosis of Respiratory Organs.—Walter Landau (*Klinische Wochenschrift,* September 24, 1925) prefers the subglottic route, the pharynx and larynx being anesthetized as in endolaryngeal procedures. Patients who have a marked secretion of mucus and an irritative cough are prepared with morphine and atropine. With a laryngeal syringe, the cannula of which is long enough to reach under the glottis, two c.c. of a two per cent. cocaine solution are injected into the trachea. After a short pause, the iodipin is injected under vision with a laryngeal mirror. The iodipin must be previously warmed so as to make it a thinner fluid, and ten to forty c.c. may be used. According to the region to be examined, the injection may be made in the sitting, dorsal, or lateral position, and possibly with lowering of the upper part of the body. The exposure to x rays should be made as soon as possible after the injection of the contrast medium, as the latter soon spreads, is coughed up, and the picture becomes less distinct.

The author draws the following conclusions from his own experiences and the literature:

1. Iodipin appears to be just as good, as regards its manner of action and the ease with which it is borne, as lipiodol.

2. Although the main mass of the oil is coughed up, there is very probably a resorption of a certain portion of it, the rapidity and amount of which is not yet definitely determined.

3. In agreement with other authors, the use of iodipin for a roentgenographic contrast examination is a considerable improvement in the diagnosis of bronchiectasis.

4. The demonstration of hollow cavities can be expected only in isolated cases, and a negative finding does not prove anything; however, a positive finding in doubtful cases may be of a decisive nature and should always be looked for.

5. In case the contrast oil does not penetrate to certain sections of the lung, especially in the apical regions, the occlusion of these particular portions of the bronchi cannot be assumed. Even with the different postures it is not always possible to inject with certainty a definite portion of the lungs, especially if only a single examination can be made.

6. This method is certainly well suited for the diagnosis of bronchocutaneous and pleuropulmonary fistulas; in such a case the injection of methylene blue into the skin fistula or the introduction of ether into the empyema cavity are valuable aids which determine the connection with the bronchial tree.

7. This method should be used only with the strictest indications. Even though clinical experiences have not shown the occurrence of any resulting injury, we must nevertheless take into consideration the histologic changes of a certain grade in the alveoli, a possibility, the importance of which must be weighed against any help that may be expected from the procedure.

Radiotherapy in Bronchial Asthma.—Gabriel Moner (*Revista de la Sociedad Argentina de Radio y Electrologia,* May 28, 1925) reports the results of radiotherapy in twenty-three cases of bronchial asthma. He believes that this measure is one of value in certain cases of bronchial asthma, and one to be tried when other measures have failed. Cure was obtained in thirty-eight per cent. of the cases.

Radiological Examination of Male Genital Apparatus by Injection of Lipiodol.—Eduardo L. Lanari and Alejandro Astraldi (*Revista de la Sociedad Argentina de Radio y Electrologia,* May 28, 1925) believe that they are the first to report the use of lipiodol for the examination of the seminal vesicles. They thing that this substance has the incontestable advantage over all other substances that it is nonirritating and does not provoke an epididymitis.

A New Method in Electrotherapy.—Theodor Bruno Weiss (*Wiener klinische Wochenschrift,* October 1, 1925) conducted some experiments with the idea of impregnating human bone with silver and silver salts with the aid of an electric current. This method of treatment offers some valuable points therapeutically in tuberculosis. A bactericidal effect is shown by the battle against the tubercle bacilli in the deep tissues through the effect of an effective chemical substance. It was found that the still undestroyed bone is impregnated with a protective substance that prevents the advance of the process. The bone that is still in the initial stage of the disease is plugged. It is also possible that there results an incitation to bone regeneration.

The experiments were conducted only on bony tissue, but it may be assumed as highly probable that the nonbony tissues (tuberculous granulations) take up more or less of the colloidal silver and are influenced in this or some other way by the bactericidal material penetrating the bone. Although these experiments are still in an experimental stage, it may well be said at the present time that this method of treatment seems to justify the hopes that it will prove useful therapeutically in bone and joint tuberculosis.

DERMATOLOGY

Eczema in Infancy Due to Protein Sensitization.—Bret Ratner (*Medical Clinics of North America,* November, 1925) presents three cases of severe eczema which were shown to be caused by protein sensitivity, and he also shows that the elimination of offending proteins effects good results.

That there may be a goodly number of eczema cases which do not respond to protein sensitization investigation and do respond to the various methods of treatment advocated by others, the author grants; such cases, however, do not, as a rule, belong to the severe refractory type referred to by the author, but rather are of the milder facial and other local types. He also agrees that there are spontaneous cures. When cases, however, resist local and general treatment, they should be studied from the viewpoint of protein sensitization; in fact, they should only be undertaken after they have been observed for a number of weeks, and do resist such treatment. Furthermore, they should not be taken unless a most complete study can be made. The cooperation of the patient is absolutely necessary for such a study. In dealing with protein sensitization in infants and children, one must never lose sight of their nutritional requirements, for without the understanding of the nutritional side only partial good can be accomplished.

Bakers' Dermatitis.—N. Howard Mummery (*Lancet,* September 26, 1925) advocates the following prophylactic measures and treatment for bakers' dermatitis. Prophylaxis includes:

1. The exclusion as far as possible from dough and pastry handling of all persons with dry skins which render them subject to chapping and cracks in winter.
2. Insisting that all minor lesions such as cracks, abrasions, and hang nails be reported at once and treated with a solution of nitrate of silver or iodine.
3. Weekly manicure on special lines, including the addition of anosol to the soap solution used for the softening of the fingernails, for workers particularly prone to contract the disease.
4. Providing all workers in contact with flour, dough, pastry, and sugar with a small towel suspended from a tape round the waist, these towels being collected and washed daily. The abolition of all roller or common towels.
5. Supplying bowls of a weak, harmless antiseptic solution, such as sodium hypochlorite, in suitable positions in workrooms, and encouraging employees to rinse their hands in this solution occasionally while at work.
6. Every skin eruption, however trivial it may appear, has to be reported to the medical officer immediately, and in all cases detected the patients are suspended from duty and treated at the factory surgery until well.

The use of Metchnikoff's ointment (subchloride of mercury thirty-three per cent. in anhydrous lanolin) has been found entirely satisfactory if applied freely, rubbed in, and covered to exclude air. When possible the evacuation of the vesicles greatly hastens healing. All cracks are painted with nitrate of silver, fifteen grains to the ounce of spiritus etheris nitrosi, before the ointment is applied. A patient so treated in the early stage generally clears up entirely in a week, but after resuming their ordinary work the patients continue to apply the ointment at night, when off duty, for a month or so in order to prevent relapses. Sometimes considerable patience is required to eradicate the disease, but the intelligent worker will at once report the appearance of a fresh vesicle which can then be evacuated antiseptically and aborted without further absence from duty.

A Special Form of Chronic Paronychia.—Joseph von Deschwinden (*Schweizerische medizinische Wochenschrift,* September 3, 1925) calls attention to the group of chronic paronychias that is not clearly defined, which is not even clearly determined etiologically. Many physicians can recall cases of chronic paronychia that have resisted all forms of specific and nonspecific therapy, as well as surgical therapy. Four such cases are reported by the author.

Treatment with tincture of iodine, iodoform, silver nitrate and balsam of Peru salve, ichthyol, salicylic plaster, chromic acid, and even röntgen and quartz light irradiation, etc., were all futile. In the less chronic cases success has been reported with hot baths and weak disinfectants in individual cases. Gray salve has also given some favorable results.

The author achieved striking results with neosalvarsan. Treatment was given twice a week when possible. The neosalvarsan powder is pushed under the nail groove with a suitably cut piece of wood, taking care that it reaches to the deep foci or small abscesses. The pains soon disappear and the reddening and swelling also recede. The symptoms may be aggravated temporarily, but soon improve under bland salve treatment. After the symptoms have disappeared and additional one or two applications of neosalvarsan will prevent recurrences. One or two applications may result in a cure.

It is believed that a small, rodshaped, gram negative bacillus with rounded corners is the excitant, as it was possible in every case to obtain a culture from the expressed secretion. The condition could be reproduced experimentally in guineapigs.

Radical Operative Treatment of Varicose Ulcers.—Gunnar Nyström (*Acta chirurgica Scandinavica,* January 21, 1925) state that varicose ulcers occur more frequently than is generally imagined and fifty per cent. of them in persons under sixty years of age. The best treatment of large callous ulcers consists in excision and skin grafting after the method of Thiersch. Recurrences set in more easily after spontaneous healing than following grafting, which fact may be due to the plane of demarcation between the epidermis and the cutis uera being different in the different modes of healing. The more radical the excision the more certain the results, and the excision should be made to include not only the ulcer itself but every trace of callous scar tissue beneath and around it down to the periosteum, in order to secure a bed of normal tissue for the graft. In following up a series of nine cases in which operation was performed, six were found healed from seven to twenty-two months after operation, two being only partially successful and one not traced.

Treatment of Internal Leishmaniosis.—Guido Izar (*Presse médicale,* March 7, 1925) states that tartar emetic, while usually highly effective in this disorder, is sometimes unavailable because it is not well borne or cannot be continued on account of renal or cardiac lesions. In a few cases, moreover, it is ineffectual. In two cases which proved resistant even to large dozes of tartar emetic the author used successfully intravenous injections of an alkaloid from *Sanguinaria canadensis,* sanguinarine sulphate, and of isoamylhydrocupreine hydrochloride. These two cases having been cured in three months, a single solution combining the two remedies was employed in subsequent cases, 0.4 gram of the first compound and 4 grams of the second being dissolved in 100 grams of distilled water. This solution is injected in doses ranging from one-fourth to two mils. The amount is increased by one-fourth mil at successive injections, according to the patients' and the manner in which the drugs are tolerated. Injections are repeated twice weekly until the enlarged spleen subsides. The gratifying results obtained justify further trial of the treatment.

Gaucher's Disease.—V. Tramontano (*Rinascenza Medica,* July 1, 1925) gives the clinical history and findings as well as the results of histopathological study of a case of Gaucher's disease or splenic endothelioma. Three excellent plates illustrate the article and the author believes that this disease is due to hyperplasia and absorption of a special substance which is found in the reticuloendothelial apparatus of the hemolymphopoietic organs.

Erythredema or Pink Disease.—The condition described by C. P. Lapage (*Lancet*, January 23, 1926) has lately made its appearance in Great Britain, and occurs in young children. It has been called erythredema, erythredema polyneuritis, acrodynia, and pink disease. The characteristics are fairly sudden onset in a healthy baby, beginning with irritability, insomnia, and loss of appetite. A miliary rash appears, followed by the development of the characteristic pinkness of the hands, feet, and face, and marked hypotonia of the muscles. Symptoms resembling meningismus appear, and the child becomes intensely miserable with photophobia, gingivitis, and dropping out of the teeth. Death may occur very suddenly as the result of weakness or terminal infection, or the child may make a slow recovery and return to complete health. The rash may continue to appear, sometimes with small pustules, and in most cases desquamation occurs, noticeably at the edges of the pink areas. In severe cases there may be a resemblance to chilblains. The hair becomes dry and wispy. Salivation occurs, and perhaps nasopharyngitis. Ulcers of the mouth are not rare. The pulse is rapid and the blood pressure very high. The blood may show a polymorphonucleosis or a leucocytosis. The urine may show pus (pyelitis?). The progress of the case is (in the author's series of twelve cases) usually favorable, but fatalities may occur.

As to the etiology, this disease occurs in children between one to three years of age. Both sexes are equally affected. Most of the cases occur in the early spring or summer. There is as yet no evidence of cases coming from any one area. There are several theories as to causation; one of the most likely is that it is an infective disease. Nasopharyngitis has been reported and diphtheroid bacilli have been found. The rash is very like a septic condition, and the author has made many attempts to obtain an organism from the pustules, but it is very difficult to find any actual pus, and he only succeeded in obtaining a staphylococcus which was probably a skin infection. Up to the present time cultural examinations of the blood have been negative. Most observers have come to the conclusion that it is not a deficiency disease. The symptoms of salivation, rapid pulse, insomnia, mental depression, and the characteristic pinkness and edema point to disorders of the vegetative nervous system.

The disease may be mistaken for: 1, toxic edema following gastroenteritis; 2, meningitis; 3, multiple neuritis; 4, mental defect; 5, general tuberculosis; 6, congenital syphilis; 7, Raynaud's disease; 8, erythromelalgia; 9, rheumatism with sweat rash; and 10, pellagra. But in none of these is there the characteristic persistent pinkness of the extremities.

The treatment is symptomatic and hygienic. Rest under good hygienic conditions is very important. The diet should be generous. Codliver oil and nux vomica and small doses of arsenic are useful. Thyroid does not do good. For the rash, dusting powders, an ointment of sulphur and phenol ointment (equal parts), and tincture of iodine locally, have been recommended. Internally, calcium lactate is of value. The nasopharynx should be cleared if there is any evidence of infection. Tonsillectomy has been recommended to shorten the duration of the disease. In the photophobia cases tuberculin has given marked benefit.

Two Forms of Dermatitis Due to the Use of Methylated Spirit Externally.—P. B. Mumford (*British Medical Journal*, October 3, 1925) states that the increasing restrictions imposed on the use of alcohol have led to the occurrence of various irritations of the skin in persons who are compelled to use commercial alcohol. Among those hitherto unaffected are surgeons and nurses, who use spirit for the purpose of disinfection, and also hairdressers employing spirit lotions and spirit soaps.

The condition was proved to be due to the alcohol by a process of exclusion of all other factors. When the use of spirit ceased, the dermatitis ceased also. The lesions were of a dry eczematous type and affected particularly the webs of the fingers, the wrists, and the forearms. The lesions were intensely irritable and commenced within twelve hours of exposure; in certain cases fissuring of the skin and superficial bleeding occurred when the condition became severe. Only one of the persons so affected was predisposed to eczema. The exact chemical irritant concerned in these cases was not isolated, but a change of source of supply checked the appearance of the lesions.

The outbreak among the barbers was more extensive and more severe in its results, although two of the cases occurred in men who had had general eczema (from unrecognized causes) elsewhere on the body. Several of the other employees complained of itching, burning, and tingling of the hands after using certain of the preparations.

The socalled dry shampoo contained about fifty per cent. water and forty-eight per cent. alcohol; it also contained a gritty substance, potassium carbonate, and a little coloring matter. It contained no pyridine.

The various frictions contained the following irritants: pyridine, 0.49 per cent. of the total mixture, and twenty-five per cent. of the residue after evaporation on the water bath; also traces of arsenic and aniline coloring matter. It appears that the use of pyridine is very common in spirit, and it is likely that the cause of the trouble lay in the use of spirit containing this denaturant by the manufacturers. Evaporation of the particular friction referred to above left a residue which was largely composed of pyridine and gave rise to irritation of the skin when rubbed in.

Postvaccinal Purpura.—Although there were practically no untoward results observed after almost the entire city of Milwaukee had recently undergone vaccination, Dr. A. B. Schwartz (*American Journal of Diseases of Children*, December, 1925) describes the case of a seven year old boy with purpura occurring after vaccination; no specific relationship, however, could be established. The child made an uneventful recovery.

GENITOURINARY

Tumors of the Testicle.—F. G. Bell (*British Journal of Surgery*, Vol. XIII, No. 50) discusses the seminoma or germinal celled tumor of the testis according to the following plan:

Origin.—It arises from a proliferation of the cells of the seminiferous tubules in precisely the same way as glandular carcinoma of other organs.

Age Incidence.—It declares itself most frequently in the fourth decade.

Rate of Growth—It advances more slowly than teratoid carcinoma.

Structure.—It presents in the main a specific structure which may be definitely related to the seminiferous cells, but is subject to certain variations in type.

Carcinoma or Sarcoma?—Carcinomatous features usually prevail, but it is common to find mixed histological characters in the same tumor. This feature is probably related to the mesothelial origin of the seminal cells and to reversionary tendencies.

Metastases.—Most germinal celled tumors behave like cancer and spread by the lymphatics. Occasional spread by the bloodstream is to be related to sarcomatous characters.

Prostatic Abscess.—L. Herman and J. Carp (*Annals of Surgery*, June, 1925) advocate incision and drainage treatment of this complication since unoperated cases frequently end fatally or in chronic invalidism.

Abscesses of nongonorrheal origin are far more serious as a class than those complicating acute gonorrhea.

The clinical differentiation between intraprostatic and periprostatic abscess is often impossible.

The treatment of choice is perineal extraurethral prostatotomy.

Diversion of the urinary stream by means of an external urethrotomy is advisable in cases complicated by large periprostatic collection and especially in chronic cases.

Leucocytosis is one of the most important diagnostic signs.

Acute Urethritis in the Male.—D. A. Sinclair (*International Journal of Medicine and Surgery*, Vol. XXXVIII, No. 12) says that in a certain number of cases of specific urethritis, seen within the first few days of the onset, where the infection was limited to the anterior portion of the urethra, I have tried out neutral acriflavine, as a hand injection, four times a day, with gratifying results in a few cases, succeeding in completely checking the disease within two weeks; but in the majority of instances I was disappointed, for the infection persisted and invaded the posterior urethra. Nevertheless, this drug is worthy of at least a week's trial, especially if the disease is seen within the first few days after infection. If, in our judgment, the result is not promising, argyrol or protargol is substituted and, combined with this, daily irrigations of potassium per-

manganate to the anterior urethra. Mercurochrome has been tried by me in the same manner, but was found to be too irritating, making matters worse, and so I have discontinued its use altogether.

For acute epididymitis the patient should be confined to his bed, and the scrotum supported by means of the so-called Bellevue bridge, or by a small soft pillow between the legs and against the perineum. Hot flaxseed poultices, about seven inches in diameter and two inches thick, should be applied every hour while the patient is awake, and he should be warned against using them too hot, otherwise blistering of the parts will follow. An ice bag, partly filled with finely chopped ice, gives relief, but is not as efficient as the poultices. The use of gonorrheal vaccines may be of help and is recommended for a trial. In unusually mild cases of acute epididymitis, the process is limited to the globus minor, but in the greater number the body and head of the epididymis partake in the inflammation. The testicle is rarely, if ever, involved, but there is always an exudation of serum into the cavity of the tunica vaginalis, producing symptomatic hydrocele. Under rest in bed and appropriate treatment the acute inflammation usually subsides in from one to two weeks, leaving a thickened epididymis, for weeks or perhaps months afterward, before complete resolution may be said to have taken place. Resumption of local treatment to the urethra or prostate should be cautiously undertaken, lest a relapse be precipitated. In the severer or fulminating type of epididymitis, attended by extraordinary pain and prostration and rebellious to the antiphlogistic measures employed, or in acute or sub acute relapses, surgical intervention is indicated, and the pus found in the globus minor evacuated. This procedure always brings quick relief of the pain and shortens what would otherwise be a tedious, long drawn out convalescence.

Ureteral Strictures, Kinks, and Abnormal Inserts.—D. Eisendrath (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 5) maintains that the "hang" test, after the manner of Hunner, is not above dispute. If one watches, through an operating cystocope, the wax bulb during its withdrawal, one will see that the "hang" is obtained at a point where the ureter is normally very narrow, i. e., at the vesical outlet. Again the angle formed by the justavesical and intraparietal portions of the ureter will lead us astray unless we bear it in mind in withdrawing the bulb. The use of solid bougies of varying sizes in determining the caliber of the different levels of the ureter is more accurate than any other method. It is therefore open to question whether the examination for the presence of ureteral strictures should not be limited to the ureteral bougie, plus ureteropyelography. This latter method should be carried out by first filling the renal pelvis and then making one exposure. A little more of the opaque medium should then be injected until the catheter has been completely withdrawn, and then a second film exposed. We feel fairly confident that when increased pressure and more of the opaque medium are employed the normal ureter will not dilate enough to result in widening the ureteral shadow. We are, however, continuing to experiment on this question.

Ureteral stricture occurs far more frequently than was formerly thought to be the case. During the past three years we have found in patients of all ages strictures when least suspected, by keeping their possible presence in mind in cases of abdominal pain of obscure origin, in recurrent ureteral colics or calculus formation, in hematuria, and in persistent pyelitis. In these cases the improvement obtained after dilatation combined with pelvic lavage ought to convince anyone with an open mind that he who overlooks the occurrence of ureteral stricture is neglectful of his duty toward his patient.

As regards ureteral kinks one should not draw the deduction that when a kink is seen in the ureteropyelogram it is necessarily responsible for all of the symptoms. If, however, we have evidences of renal infection clinically, and these are confirmed by the urological study of the case, it is justifiable to state that the kink is responsible for the obstruction to the escape of the pelvic contents.

Under normal conditions the ureter arises from the most dependent portion of the renal pelvis. The advantage of this form of ureteropelvic junction from the standpoint of drainage is self evident. Although the renal pelvis is simply an expansion of the cephalic end of the embryonic ureter, a faulty development may take place so that the ureter joins the pelvis at a higher point. This anomaly has been known for years, and a fairly large number of plastic operations have been done to correct it.

My only object in bringing this anomaly before you is to direct attention to the possibility of recognizing it before operation through the aid of ureteropyelography. In three recent cases the chief complaint was recurrent pain over the kidney or one of the upper abdominal quadrants.

In all of the ureteropyelograms one can observe that the ureter passes either in front of, or behind, the lowermost point of the renal pelvis, before entering the latter. The knowledge of the existence of such an anomaly is not only of great value from a diagnostic standpoint, but also from that of treatment. Some form of plastic operation should be advised at an early stage, before pathological changes due to infection endanger the success of such a procedure.

Chronic Anterior Gonorrheal Urethritis.—F. Bierhoff (*International Journal of Medicine and Surgery,* Vol. XXXVIII, No. 12) advises the use of the endoscope where treatment by dilatation has failed to destroy all the gonococci, in order to locate the individual foci and to destroy them.

For this purpose it is advisable to employ a tube of at least twenty-five French calibre, since smaller tubes do not permit of easy manipulation of the necessary instruments. If necessary, a meatotomy should be done. Through the endoscopic tube the diseased glands may be slit with the endoscopic knife, after which the dilatations may be resumed or we may resort to their electrolytic destruction. My personal preference is for the latter procedure, which is done as follows: Under a local anesthetic, preferably novocain, in one-half to one per cent. solution—after preliminary disinfection of the urethra—the endoscope is inserted, and the diseased glands and lacunas located. Those which are most diseased should be attacked first.

A moist sponge electrode, attached to the *positive* pole of the electric source, is applied to the thigh of the patient, while the urethral electrode is attached to the *negative.* The point of the urethral electrode is inserted into the mouth of the affected gland, and gently pushed in until it meets with resistance. Force should never be used. The contact is now made, and a current of three milliamperes allowed to flow. If the current is passing properly, small gas-bubbles will be seen to appear at the mouth of the gland, continuing as long as the current is on. It is customary to apply the current only for about one and one-half to two minutes for each gland, and to treat from four to six glands at a sitting. If a stronger current is applied, there is apt to be a painful, though harmless shock experienced by the patient on making and breaking the current, and the reaction following the applications may be severe where the stronger current is used, or where more glands are treated at one sitting. The sessions should be at from five to seven day intervals.

When the current has been properly employed, there will be found, upon removal of the electrode and wiping away of the bead of froth, at the point of electrolysis, a deeply reddened and infiltrated zone, surrounding the gland which has been thus treated. On subsequent examinations, the discoloration is darker in color, but rapidly disappears. It is my custom to treat every gland which shows inflammatory changes, even though a distinct discharge of pus from it may not be discernible. Usually several applications are needed, glands being repeatedly treated until they are dry, after the disappearance of the zone of reaction.

MALIGNANT GROWTHS

Some Points in the Diagnosis and Treatment of Tuberculosis and Cancer of the Larynx.—James Dundas-Grant (*Clinical Journal,* December 9, 1925) concludes his long paper, begun in the October 7th issue of this journal, by emphasizing the following points:

1. Actual cure may take place in a large proportion of cases of tuberculosis in the slighter forms, and even in some very advanced cases, persevering treatment may result in a subsidence and even disappearance of the lesions. Among the remedial agents comes first and foremost the maintenance of silence. The inhalation of antiseptic vapours and solutions is a valuable subsidiary aid at the disposal of every practitioner. The cirrhosing action of the galvanocautery point cannot be overrated as long as it is not overdone, but can only be practised by the expert. For the relief of pain the practitioner has at his disposal a most precious resource in Leduc's tube and the anæsthetic powders used with it,

while the more delicate operation of injecting alcohol into the superior laryngeal nerve is very effective both in tuberculosis and cancer of the larynx. Difficulty in drinking due to regurgitation is generally overcome by the use of Wolfenden's method, and occasionally by removal of a mass of tissue preventing the closure of the glottis.

2. The absolute necessity for early diagnosis, especially in view of the brilliant possibilities in intrinsic and, to a lesser degree, in extrinsic cancer of the larynx if timely operation is practised. As an outcome, the more extensive use of the method of removal of a portion of tissue for microscopical examination in view of the difficulty of diagnosis by inspection in the early stages, even in the hands of acknowledged experts.

3. Thyrotomy for circumscribed intrinsic carcinoma is almost invariably successful and that even if from omission of biopsy it happens to be performed in a case of tuberculosis so localized as to simulate carcinoma, it does not necessarily destroy the patient's chances.

4. Total laryngectomy, though a serious and mutilating operation, is now a thoroughly practicable one, which tends to become still more so in view of the development it is at present undergoing.

5. Though radiologists at present are agreed that if the disease can be removed by surgery this should be done forthwith, the time may come when the scope of application and, above all, the dose of the rays are so accurately defined that radiotherapy may precede other methods.

Cancer of the Lower Lip.—W. Herbert McGuffin (*Canadian Medical Association Journal,* October, 1925) submits these rules as a summary of his paper. 1. Examine carefully such benign conditions of the lower lip as warts, cracked lips and cold sores, keratoses and leucoplakia, which are all forerunners of cancer.

2. Classify the epitheliomata into superficial, papillary, deeply infiltrating, and glandular types.

3. First type is a radium case.

4. Second type should be treated by radium and x rays, then surgery, and finally by radium and x rays.

5. Third type is a radium and x ray case.

6. Don't forget the hygienic and supporting treatment: such as, cleanliness and avoidance of all sources of irritation in the treated area; fresh air, sunshine and rest; suitable diet, and alleviation of coexisting symptoms.

7. Follow up the progress of your cases.

ENDOCRINOLOGY

Anuric Diabetic Coma.—A. Clarke Begg (*Lancet,* July 11, 1925) recognizes two distinct types of diabetic coma: 1, the ordinary type associated with acidosis, which, as a rule, recovers with insulin treatment; and 2, the type with little or no acidosis (the socalled postoperative type), in which the patient dies in spite of the most energetic treatment.

The points common to both varieties of coma are: 1, drowsiness going on to coma; 2, vomiting (usually) and constipation; 3, lowered tension of eyeballs; 4, raised blood sugar; 5, glycosuria; 6, tendency to heart failure.

The differences between the two types are:

Ordinary diabetic coma with acidosis.—1, Blood: blood sugar moderately high; blood urea about normal. 2, Urine: good quantity and soon becomes increased with treatment; much acetone and diacetic acid; no albumin (usually). 3, Clinical: coma usually deep some time before death; air hunger marked; odor of newmown hay in breath. 4, Prognosis: insulin treatment usually cures.

Diabetic coma with absent or slight acidosis.—1, Blood: blood sugar very high; blood urea very high. 2, Urine: usually small quantity going on to complete anuria; little or no acetone or diacetic acid; some albumin. 3, Clinical: coma often not deep till just before death; air hunger absent or slight; no odor of newmown hay in breath. 4, Prognosis: Usually fatal from anuria.

Whether this type of diabetic coma without acidosis is a distinct entity is doubtful, as some of the cases begin with the typical signs of ordinary diabetic coma, and it is only when the acidosis has cleared up under treatment, without corresponding clinical improvement, that they show themselves to be of the definite anuric type described above. Be that as it may, it is certain that as regards symptoms, physical signs, course and prognosis, it is a distinct clinical type and that the immediate cause of death is suppression of urine.

The condition might be called diabetic coma of the renal type, but until further knowledge is gained the most suitable name would appear to be "anuric diabetic coma." This has the advantage of emphasizing the outstanding symptoms of the disease and the one for the relief of which all our energies have to be directed.

Rapid Alterations in the Blood Sugar Level of Rabbits as Result of Intravenous Injections of Killed Bacteria of Various Types.—Isolde T. Zeckwer and Helen Goodell (*Journal of Experimental Medicine,* July, 1925) produced a rapid rise in the blood sugar level of rabbits by intravenous injection of killed Bacillus proteus, Bacillus coli, and Bacillus paratyphosus B. In a few hours time this returned to nearly the previous level. The results with Bacillus enteritides and Bacillus paratyphosus B are in accord with the report of Menten and Manning. A less pronounced rise in blood sugar was produced by these two organisms than by those of the first group.

Hyperthyroidism.—N. B. Foster (*American Journal of Surgery,* Vol. XXXIX, No. 12) asserts that while iodine is definitely useful, its employment in each case is an experiment. The duration of its effect is not yet known, nor has it any effect in cases of toxic adenoma.

As to surgery the cases of toxic adenoma occurring in patients in middle life admit of no debate. If the thyroid tumor is not removed the patients succumb to cardiac disorders induced by thyrotoxicosis or to thyrotoxicosis purely.

While it seems to me debatable whether the average patient with exophthalmic goitre is in a better state of health a year after removal of the thyroid than he would have been at the same time had no operation been done but all the other measures in treatment were just as carefully carried out, I do not think that his best insurance against a return of the thyrotoxic state five or ten years hence is in having had the thyroid removed.

Probably only the minority of the patients who have had exophthalmic goitre ever attain normal robust health. While many attain sufficient health to lead useful lives there is quite commonly a residue of nervous symptoms, emotional instability, or low vascular tone which compels the individual to lead a life more protected than is consistent with the term "cured." It has been claimed that this is the constitutional make-up on which exophthalmic goitre as a disease is engrafted, that only those of this constitution are susceptible and that after successful treatment the patient again is restored to a state normal for him but still abnormal. This seems to me unsatisfactory in that it evades the essential problem of etiology.

Surgery in Diabetics.—H. Roth (*American Journal of Surgery,* Vol. XXXIX, No. 12) reports on twenty cases, of which only two of the total number succumbed. His success he attributes to the various measures employed to reduce the existing hyperglycemia and acidosis to a point of comparative safety, which measures he describes as follows: If the surgical complication of the diabetes was such that prompt surgical intervention was imperative to save life, no time was lost in delaying operation for too much laboratory investigation or for thorough medical preparation of the patient. Occasionally it may be permissible and advisable to carefully administer insulin and glucose before and even during a prolonged operation, bearing in mind the danger of rendering a patient rapidly and entirely sugar free. To control acidosis a sufficiently amount of water was administered either by mouth, rectum, hypodermatically or intravenously. This was essential, especially in patients with fever or in those who had been vomiting or were unable to retain nourishment for some time before the operation or in those who were likely to vomit after anesthesia. Next in importance was the administration of an adequate quantity of carbohydrates, proteins, and fat. Rectal injections of a ten per cent. solution of glucose were frequently employed and orange juice was given to patients who could take fluids by mouth. The dosage of insulin given depended upon the degree of hyperglycemia and acidosis and upon the amount of sugar and diacetic acid in the urine. The latter was examined at short intervals, usually every two or three hours. After operation the quantity of insulin to be given was gauged to a great

extent in the same way. In several cases the use of insulin was discontinued entirely, because the patients were found doing well on the prescribed diet. The patients requiring operations for some chronic condition, such as hernia, gallbladder, pancreatic disease, or hypertrophied prostate, etc., were prepared for several days before operation by proper dietary measures and the administration of insulin in sufficient dosage to reduce the existing hyperglycemia and acidosis.

The selection and administration of the necessary anesthetic received careful consideration. Novocain, used locally, was considered the safest anesthetic, providing that the operation was such that it could be completed in every detail with the aid of this particular kind of anesthesia. Novocain may also be used for spinal, paravertebral, sacral and parasacral anesthesia. As a general anesthesia nitrous oxide and oxygen is undoubtedly the safest combination for diabetic patients, as it is the least likely to cause postoperative acidosis.

Knowing that the tissues of diabetics are very susceptible to pyogenic infections, that the lowered resistance of their tissues favors the rapid spread of an infection, and that diabetes is more difficult to control when an infection is present, all infections were promptly drained and treated according to accepted surgical principles. After such drainage the fever and acidosis usually subside and the diabetes becomes more amenable to antidiabetic treatment.

The Hypophysial Adenomata.—N. M. Dott and P. Bailey (*British Journal of Surgery,* Vol. XIII, No. 50) present a detailed study of cases of this complication with a prefatory note by Harvey Cushing. They state in conclusion:

1. A clinico pathological study of one hundred and sixty-two examples of pituitary adenomata shows that three fairly definite types of tumor can be histologically recognized and that they represent more or less definite clinical syndromes.

2. The syndrome of acromegaly corresponds with the chromophil adenoma, that of hypopituitarism with a chromophobe adenoma, and the mixed syndrome with a mixed type of adenoma.

3. Though our knowledge of the physiological action of the pars distalis is in its infancy, it may be asserted not only that it exerts an influence on growth, but that the eosinophilic cells are the ones chiefly concerned. In the absence of an increase in the number of these cells, evidences of overgrowth of one sort or another have not been found to occur.

4. We have as yet no knowledge of the biochemical influences which underlie the formation of these adenomata, and can only draw analogies from the better known lesions of the thyroid in arriving at our interpretations of them.

5. The treatment of these lesions is therefore still at the primitive stage in which a radical operative measure, rather than some simpler agent, is called upon to relieve the effects of local pressure on important neighboring structures.

Effect of a Parathyroid Hormone on Normal Animals.—J. B. Collip, E. P. Clark, and J. W. Scott (*Journal of Biological Chemistry,* March, 1925) describes the effect of the subcutaneous and oral administrations of a parathyroid hormone to normal dogs. A potent extract, administered subcutaneously, will cause a rise in the level of blood serum calcium. Successive injections produce a profound hypercalcemia, which, when long maintained, may result in death.

Demonstration of the Hyperadrenalinemia Induced by Experimental Cerebral Embolism.—A. Tournade (*Bulletin de l'Académie de Médicine,* October 6, 1925) alludes to certain experiments of Roger in which powdered lycopodium or an alcoholic solution of betanaphthol was injected into the carotid artery in animals to produce cerebral embolism. Roger had concluded that the rise of bloodpressure witnessed as a result of the embolism was due to the adrenal secretion. The rise of pressure was much more pronounced and prolonged in normal animals than in animals previously subjected to bilateral adrenalectomy. The author has confirmed Roger's conclusion in experiments involving union of two dogs by venous adrenaljugular anastomosis. Dog A, receiving the blood, has already been subjected to bilateral adrenalectomy, while from dog B, the donor, only the right adrenal has been removed, and the blood from the left adrenal passes over to dog A. Upon injection of two mils of alcoholic betanaphthol solution into the central end of one of the carotids of dog B, both animals show a rise of bloodpressure. This, in dog B, is evidently purely nervous in origin, while in the transfused dog A it is solely due to adrenalin. Another proof of the agency of adrenalin in the rise of pressure in dog A is that the spleen contracts vigorously along with the rise of pressure. Aside from the element of shock presumably resulting from cerebral embolism, such embolism exposes the bulbo-excephalic centres to an immediate anemia, soon followed by asphyxia. In earlier experiments the author had already demonstrated the ability of cerebral anemia and asphyxia to stimulate adrenal secretion.

Studies on Experimental Hypophysectomy.—I. Effect on the Maintenance of Life.—Walter E. Dandy and Frederick Leet Reichert (*Bulletin of the Johns Hopkins Hospital,* July, 1925) directed their efforts toward the development of a method as free from operative complications, trauma and hemorrhage as possible. The temporal intracranial route originally devised by Horsley was chosen, and only a unilateral bone opening was made. The operative technic is described in full. This operation is satisfactory for dogs older than six months, but for younger puppies the brain shrinking by the method of Weed and McKibben by intravenous injection of concentrated sodium chloride solution is done preliminary to the hypophysectomy. Of thirty-one adult dogs, five died soon after operation from hemorrhage and cerebral trauma; seven died in the country where they were sent for the summer, and distemper caused ten deaths, ranging from eight days to one year postoperative. In seven of the series the base of the brain was sectioned serially and studied for microscopic remnants of the anterior lobe, with negative results. The duration of life in these seven histologically proved total extirpations was thirteen, twenty-two, twenty-seven, sixty-nine, ninety, one hundred and four, and one hundred and thirty-eight days. In the young puppies in which Weed's hypertonic salt solution was used, the operative procedure was safe, all deaths following soon after operation being explainable as the result of trauma, hemorrhage and pneumonia, and deaths appearing later were explained on well recognized pathological grounds. No evidence therefore was found to support, and every evidence to refute, the assumption that the hypophysis is essential to life, or that the group of symptoms which have been described by others as preceding death in hypophysectomized animals are of hypophyseal origin.

Insulin and the Leucocyte Count.—G. Török (*Wiener klinische Wochenschrift,* October 29, 1925) found that after a subcutaneous injection of insulin, the number of leucocytes at first is diminished and then gradually rises. In man the rise is usually moderate and of short duration. The reduction in the number of leucocytes does not run parallel with the hypoglycemia because the rise in the count appears earlier than the recovery from the hypoglycemia. No relationship could be established between the changed leucocyte count and the thickness of the blood in man, as the leucocytes show a diminution in number even when the refraction of the serum revealed thickening of the blood. Inasmuch as the blood sugar content was low during the rising stage of the leucocyte count, it is not probable that such a relationship between the change in the leucocyte count resulting from insulin and the blood sugar content exists as has been found by Csépai and Weisz between the blood sugar content and the cardiovascular effect of insulin.

Influence of Abrupt Variations in Acid Concentration on the Thymus and Lymphopoietic Organs.—According to A. P. Dustin (*Revue Française d'Endocrinologie,* February, 1926, vol. 4), the extreme sensitiveness of the thymus and lymphopoietic organs to suspended or insufficient alimentation is a well known fact. On the other hand, during fasting a marked hyperacidosis is known to affect the organism. Experimental injection of acid causes extensive pycnotic disintegration of the smaller cells of the thymic cortex and to a less degree of the lymph cells in the germinal nuclei of the spleen, lymph glands, and Peyer's patches. This effect is selective and is not accompanied by passive destruction or by essential disturbance of other tissues. It is certain, then, that there exists in the organism a class of cells presenting acute sensitiveness, according to their nature, the state of their development, and perhaps also their histological relations, to reactive variations in their surroundings.

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Gregory Stragnell, M. D., *Editor*

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Medicolegal Notes.

LIABILITY OF PRIVATE HOSPITAL—PHYSICIAN NOT LIABLE FOR ERROR OF JUDGMENT

The West Virginia Supreme Court of Appeals holds, Vaughn vs. Memorial Hospital, 130 S. E. 481, that a hospital conducted for private gain is liable to its patient for injuries sustained by him in consequence of incompetence or negligence of a physician treating him at its instance under a contract to furnish him proper treatment. The purely private character of the defendant hospital was practically admitted. The plaintiff and defendant were brought together through the agency of the former's employer. In the hospital the plaintiff received the surgical and medical care to which he was entitled under the rules and regulations of the state compensation commission, the expense of such treatment and care to be paid out of the Workmen's Compensation Fund. The application to the Commission for payment of the medical, surgical and hospital treatment afforded plaintiff was rendered in the defendant's name. It included an item for an operation on the plaintiff's foot by doctors who were managers of the hospital. The X-ray machine used in the hospital for examination of the plaintiff's injury was the property of the institution. Under these circumstances it was held that the defendant could not absolve itself from the obligation it owed to the plaintiff patient to furnish him proper treatment on the claim that the physicians who treated him at his instance were independent contractors.

A verdict for the plaintiff was held to have been properly set aside and a new trial awarded to be had in accordance with the following principles announced by the Supreme Court. The Court says that it may be said to be the generally accepted doctrine that a physician is not required to exercise the highest degree of care or skill and deligence possible in the treatment of an injury or disease unless he has by special contract agreed to do so. "In the absence of such special contract, he is only required to exercise such reasonable and ordinary skill and diligence as are ordinarly possessed and exercised by the average of the members of the profession in good standing in similar localities and in the same general line of practice; regard being had to the state of medical science at the time." This general rule does not make the physician in any sense a warrantor or insurer of the success of his treatment in the absence of a special contract to that effect. An instruction was held properly refused which would have told the jury in effect that the physician was responsible for an error of judgment, without qualification, in the treatment of the plaintiff. If the physician possesses ordinary skill and exercises ordinary care in applying it, he is not responsible for mistakes of judgment, unless such error of judgment is so gross as to be inconsistent with that degree of skill which it is the duty of a physician to possess.

At the trial the plaintiff relied almost entirely upon the result which he claimed followed the treatment—that, by reason of the broken bones not being properly set, the bones at the point of the injury decayed and produced pus. Upon this question the evidence was conflicting. The bones taken from the foot were introduced. It was held that the trial court properly refused to permit them to go in evidence to the jury for lack of being properly identified. The physician who took them from the foot was not introduced as a witness, nor was his deposition taken. His absence was not accounted for. It was held that if the testimony of this witness was material to the plaintiff's case, and the plaintiff wished to avoid the effect of the legal presumption that, if he had testified, his testimony would have been adverse to him, he should show proper diligence to have him present as a witness or take his deposition.

MEMORANDUM OF LOST X RAY PHOTOGRAPHY MAY AID RECOLLECTION OF WITNESS

The St. Louis (Mo.) Court of Appeals holds, Schroeder v. Wells, 277 S. W. 578, that the testimony of a physician as to the injuries of a plaintiff in a personal enjury action, based on a carbon copy of a memorandum made by him of an x ray photograph which he took of plaintiff's lumbar region, which photograph was lost, was competent although he stated that after having examined the memorandum he had "no independent recollection of the result of the photograph other than what was contained in the memorandum," where his further testimony on cross-examination showed that he then remembered that when he made the memorandum of what the photograph showed he knew it to be correct.

EFFECT OF STRYCHNINE AND PROOF OF FATAL DOSE

On appeal from a conviction of murder by administering strychnine, it appeared that at the trial the prosecution called all eyewitnesses of the death, who testified that it was peaceful and without convulsions. The jury evidently found that strychnine was given in oatmeal or coffee at least two hours before death, caused death, and, notwithstanding the testimony of all eyewitnesses, that death was preceded by convulsions. A fatal does of strychnine, the Michigan Supreme Court said, if it does not cause immediate death, produces severe convulsions ending in death. If the poison found in the organs of the body was given about two hours before death, the doctors agreed there must of necessity have been convulsions. This uncontroverted medical evidence was directly opposed to the testimony of the eyewitnesses, and presented an issue of fact for the jury. The medical evidence was also to the effect that the accepted minimum fatal dose of strychnine is about one half grain, and may be slightly less. It is quick in action, goes to all parts of the body, because it is taken up from the stomach and intestines and carried through the blood stream everywhere the blood circulates, and a fatal dose causes death from almost immediately to three hours, and if an analysis of a well sampled one half of the stomach of a dead body, one half of the liver, and one half of the kidneys, disclosed .26 of a grain of strychnine, there would be sufficient in the system to cause death, for there would be approximately the same amount in the other half of the organs mentioned, and, if those organs contained .52 of a grain of strychnine, it would of necessity have produced convulsions, and was sufficient to have caused death.

A chemist and toxicologist made a chemical analysis of a well sampled half of the stomach, liver and kidneys, and found therein .26 of a grain of strychnine, and, over objection, was permitted to say there was, of necessity, an equal amount in the unexamined portion of the same organs. His qualification to give such conclusion was attacked. The appellate court held that the qualified medical testimony relative to the nature of strychnine and the method of its operation in the human body through the circulatory system rendered his conclusion true beyond question. His testimony was supplemented by uncontroverted competent medical testimony showing the correctness of his statement, and, without passing upon the question of his qualifications, the court discovered no harm done the defendant by his statement of a fact conclusively established by medical expert testimony. The record was held fully to support the finding that the death was caused by strychnine.

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Allergy*

E. M. ROBINSON, M.D.
Brooklyn, N. Y.

Allergy, one of the most interesting and important phenomena in medicine today, was brought to light quite recently. It is only about twenty years since anaphylaxis ceased to be a mere laboratory curiosity and its reactions in animals have been studied and reported by such men as Richet, Arthus, Theobald Smith, Rosenau, Zinsser and others. As far as allergy is responsible for human ailments its studies are even of a more recent date. It is only about ten years since such men as Doerr, Schloss, Walker, Coca and Cooke have reported their investigations in the diagnosis and treatment of human allergy.

It is no wonder, therefore, that the medical profession at large knows little about anaphylaxis, although W. W. Duke states (1) that as high as fifteen per cent. of humanity suffer from allergic manifestations in one form or another. Coca, who is more conservative, estimates the allergic sufferers to be about eight per cent.

The phenomenon of anaphylaxis is without a specific name even yet. Richet, who was the first to describe this phenomenon, called it anaphylaxis, which is from the Greek and means "without protection," in contradistinction to prophylaxis. Zinsser also uses the name anaphylaxis. Von Pirquet was the first to call it allergy which means "all-alter ergy-energy—altered energy," or altered reaction. Vaughan calls it protein sensitization and Coca calls it specific hypersensitiveness and also atopy.

WHAT IS ANAPHYLAXIS?

If you take four guineapigs and inject two of them with a certain protein—it may be egg, milk or horse serum—the two injected guineapigs will show a slight reaction; they will become drowsy and will have hemoglobinuria. This will disappear in a day or two, and they will become as well as the other two animals that were not injected. Now if, let us say, in about fifteen days you take the same kind of protein and inject all four guineapigs, an interesting thing will take place. The two animals injected for the first time will show the same symptoms as the two that were injected fifteen days previously, that is, drowsiness and hemoglobinuria; while the two that were injected the second time will show an entirely different picture. They will become violently ill and may die in a few hours or even in a few minutes, and this altered reaction to a second injection of protein we call anaphylaxis. Why and where this reaction takes place we shall discuss later.

The first to mention anything about anaphylaxis was Magendy, the famous French physician. In his lectures, published in 1839, he states that dogs which have been repeatedly injected with egg albumin die suddenly.

Flexner, in 1894, gave a clear statement of the phenomenon. In describing certain experiments he said, "Animals that had withstood one dose of dog serum succumb to a second dose given after the elapse of some days or weeks."

But it was Richet whose investigations in collaboration first with Harcourt and then with Portier during the period of 1898-1902, marked the beginning of modern understanding of the anaphylactic phenomenon. He was the first to recognize the distinct dependence of the hypersusceptible condition upon a preceding inoculation with the same substance, and that a definite incubation time must elapse after the first injection before susceptibility is developed.

In 1904, Theobald Smith communicated to Ehrlich that guineapigs inoculated with horse serum for the purpose of standardizing antitoxin acquired hypersusceptibility to subsequent inoculations given several weeks later.

In 1905, Otto, of the Frankfort Institute of Experimental Therapy, described this condition as the Theobald Smith phenomenon, and showed that it was entirely independent of the toxin and antitoxin it contained but could be produced with horse serum alone.

At this time a number of investigators took up the study of anaphylaxis and chief among them were Rosenau and Anderson of the Hygienic Laboratory of the United States Public Health Service. These American scientists attacked the problem with the primary purpose of throwing light upon the occasional cases of sudden death following the injection of diphtheria antitoxin in human beings. As a result of their classical investigations and the intensive experimental work of such men as Otto, Doerr, Wells, von Pirquet, Dale and of some of the more modern men such as Zinsser, Longcope and Coca, the following facts are known to us today.

A single injection of horse serum into guineapigs, harmless in itself, renders these animals hypersus-

*Read at the Brownsville and East New York Hospital, May 27, 1926.

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ceptible to a subsequent injection given after a definite interval or incubation time. This incubation period is about twelve to fifteen days, a second injection after this time is usually fatal. The reaction is extremely delicate. Rosenau and Anderson succeeded in sensitizing a guineapig in one case, with one one millionth of a c. c. Just think of it, one one millionth of a c. c., which is about one one hundred thousandth of a drop.

The reaction is specific; that is, horse serum sensitizes to horse serum only. Rosenau and Anderson have shown by their experiments that a guineapig can be rendered separately sensitive at one and the same time to blood serum, egg white, and milk, or to a combination of other proteins reacting specifically to each on a second injection.

Another characteristic thing about anaphylactic specificity is that there is more organ specificity than specificity of species. Kraus, Doerr and Sohma showed that animals sensitized with protein from the crystalline lens, let us say, of the dog will react to the protein from the crystalline lens of all other animals but will not react to dog serum. This shows that the protein of the crystalline lens contains a certain characteristic variety of protein peculiar to this kind of organ throughout the different animal species but not common to other tissues and organs of the same animal.

WHAT CAUSES THE ANAPHYLACTIC SHOCK?

The anaphylactic shock is due to the union of the antigen and antibody. An antigen is a substance that upon entering the animal circulation produces new substances which are called antibodies. An antibody is a substance which is brought to existence by the entrance of an antigen into the blood circulation of an animal. For example, we take diphtheria toxin and antitoxin. In diphtheria the toxin is the antigen and the antitoxin is the antibody. In the circulation of a healthy child there is neither antigen toxin or antibody antitoxin, but when the Klebs-Loefler bacilli, lodged in the throat or elsewhere, begin to produce toxin and the toxin enters the circulation it becomes an antigen and causes the production of antitoxin antibodies, a substance which did not exist in the circulation before.

In anaphylaxis the protein is the antigen, so that when we inject the protein into the circulation of the animal for the first time it produces antibodies, and when we inject the second time the antigen protein unites with the antibodies which were produced by the first or sensitizing injection. But while in diphtheria the antitoxin by its union with the toxin neutralizes the toxin and destroys the deleterious and poisonous effect of the toxin on the body cells, in anaphylaxis an altogether different thing happens. By the union of the antigen with the antibodies a new substance is formed, a very poisonous one, which is called anaphylatoxin, and this substance is responsible for the anaphylactic deaths and other anaphylactic reactions.

Now that we know about antigen and antibody in anaphylaxis we can speak about other anaphylactic phenomena.

When we inject an animal with protein, and after a few weeks inject him again with the same protein and get an anaphylactic reaction, we speak of it as active anaphylaxis. There is also such a thing as passive anaphylaxis. When we take the blood of a rabbit that has been sensitized with horse serum and inject it into a dog, this injected dog will also become sensitive to horse serum and will give an anaphylactic reaction with the first injection of horse serum; because by injecting into the dog the blood of the sensitized rabbit you have injected antibodies which are specific of horse serum antigen. This is passive anaphylaxis. In the same way if you sensitize a pregnant female to egg white, the offspring will be sensitive to egg white. This is not a true heredity but it simply means that the antibodies from the mother's circulation have entered into the circulation of the offspring.

Where does the union of the antigen and antibody take place? Earlier views favored the theory that it took place in the blood circulation. Now it is believed by most observers that the antigen antibody union takes place in the tissue cells and the reasons for this view are as follows:

1. In passive anaphylaxis (as you will remember) we do not inject the animal which we wish to sensitize with protein which would after an incubation period of at least twelve days produce antibodies. (This would be active anaphylaxis.) In passive anaphylaxis, our first injection is a serum which contains formed antibodies. Now, then, in this case we should be able to bring on an anaphylactic shock by immediately injecting the antigen after we inject the antibody containing serum. However, this is not the case. Even when both serum and antigen are injected intravenously there must be an interval of at least four hours between the injection of the antibody and the injection of the antigen, otherwise there will be no anaphylactic reaction. This time, it is now believed by many, to be necessary for the antibodies to attach themselves to the tissue cells.

2. The transfusion experiment. Manwaring was one of the first to do this experiment. He bled a sensitized dog extensively and reinfused him with the blood of a normal dog until there had been an almost complete replacement of blood. He found that the sensitized animal in spite of the replacement of his blood still remained sensitive.

SYMPTOMS

Symptoms of anaphylaxis vary in different species of animals and also vary according to the degree of sensitiveness of the animal, the dose of antigen administered, and the mode of administration. Symptoms may be so mild that one hardly notices them, or, on the other hand, they may be so severe as to terminate fatally within a few minutes.

If a properly sensitized guineapig receives a second injection of an antigen a characteristic train of symptoms ensues. There is usually a short preliminary period lasting either a fraction of a minute or several minutes during which the pig appears normal. At the end of this time the animal will grow restless. It may sneeze and occasionally emit short coughing sounds. At the same time an increased rapidity of respiration is noticeable. In light cases the animal may remain in this condition for some time then gradually slow recovery may set in, with complete return to normal in from thirty minutes to several hours. In more severe cases these preliminary stages are rapidly followed by great apparent weakness. The animal falls to the side, the legs and trunk muscles twitch irregularly and the respiration becomes

slow and shallow; the thorax never entirely contracts, but remains in a more or less expanded condition. The excursions of the lung itself seems to grow more and more shallow in spite of apparently strong inspiratory efforts, the volume of the thorax and lung remaining in the expanded condition. At this stage evidences of motor nerve irritation may appear, in that the animal may arise and attempt to run. More often, however, in this phase general convulsions set in, often several times repeated, and in these the animal usually dies.

If such an animal is immediately autopsied a characteristic condition is found. The lungs are distended and completely fill the thorax. They are usually pale and bloodless and do not collapse when the pleuræ are opened, due to a tetanic contraction of the small bronchials which practically occlude the air passages.

The symptoms of acute anaphylactic shock in the rabbit are different from those of the guineapig, in that in the rabbit there is no suggestion of the outstanding symptom of dyspnea that characterizes acute anaphylactic shock in the guineapig. After an interval of about two minutes following the second protein injection, the sensitized rabbit may run aimlessly or may fall over from extreme weakness, and after a few short gasps the animal dies with the eyes in exophthalmos.

Autopsy reveals the lungs in collapsed condition and capable of normal inflation and deflation. Coca tried perfusion of the pulmonary circulation through a cannula in the pulmonary artery and found the vessels completely obstructed and resisting a pressure of more than ninety c. c. of saline, while a pressure of ten c. c. will perfuse the normal pulmonary vascular system of the rabbit. And he justly concludes that death in the anaphylactic rabbit is probably due to a tonic spasm of the muscular coat of the pulmonary arterials.

Manwaring proved that the site of the anaphylactic reaction in the dog is in the liver. The characteristic pathology of acute anaphylactic shock in this animal consists of a tremendous congestion of the liver with a secondary stasis of the portal circulation. The effect of this is the collection of almost all of the animal's blood in the abdomen with a corresponding ischemia of the central nervous system and of the thoracic viscera. The cause of rapidly falling blood pressure which was one of the earliest anaphylactic symptoms noted in these animals can readily be understood because, as Coca remarks in his *Essentials of Immunology,* "in acute anaphylactic shock the dog bleeds into its own liver and abdominal veins."

The symptoms of anaphylactic shock in the dog are due, first, to the hepatic and portal congestion, and later to the fall in blood pressure and the ischemia mentioned above. First, there is vomiting or retching and an evacuation of the bowels. After a few minutes the animal begins to stagger and falls over in collapse. The blood aspirated from the veins is found to be incoagulable.

Thus, we have seen that in guineapigs the cause of death resides in the musculature of the bronchials; in rabbits a similar cause is found in the circulation of the lungs; and in dogs, the hepatic circulation seems to be particularly involved. A most ingenious and plausible explanation for these is suggested in Wells's review. As a result of anatomical studies by a number of different workers, he states that histological studies of guineapigs have shown an astonishing development of the bronchial musculature, the finer bronchials consisting almost entirely of muscular tubes. In rabbits the pulmonary arteries present a remarkable degree of muscular development analogous to that of the guineapig bronchials; as far as dogs are concerned, he quotes Simonds as stating that the walls of the hepatic veins of the dog are different from those of any other animal, also, in showing a very high development of musculature; and Wells concludes that it is at least a reasonable hypothesis that the differences in these species in reaction to one and the same mechanism depend upon the distribution of nonstriated muscles. Interesting in connection with Wells's suggestion is the fact that Huber and Koessler have shown that asthmatic persons show a hypertrophy of the musculature of the bronchials the same as is found in the normal guineapig.

OTHER SYMPTOMS OF ANAPHYLAXIS

During the anaphylactic shock there is always a fall of temperature of several degrees, and this may be of much assistance in determining the occurrence of mild reaction, when other symptoms of shock are not strongly marked. There is also a leucopenia and a diminution in the polynuclear leucocytes.

In addition to guineapigs, rabbits and dogs, horses and goats have also shown to be particularly sensitive to anaphylaxis. The lower monkeys, Zinsser states, are exceedingly hard to sensitize and when after repeated injections sensitization is accomplished the symptoms are usually mild and not unlike those prevailing in human beings; in fact Zinsser cites a single case in which edema of the face and a condition somewhat similar to serum sickness in men resulted.

DESENSITIZATION OR ANTIANAPHYLAXIS

In properly sensitized animals the result of a sufficient dose of antigen given at the proper time is very often death. When the time and quantity are so chosen that instead of death there is merely a severe shock the animals are immediately, thereafter, in a refractory condition; that is, they are no longer sensitive to further injections of the specific protein.

This observation was made by many investigators and was thoroughly studied by Besredka and Steinhard who named this immune condition antianaphylaxis. Besredka has also proved that this state of antianaphylaxis can be brought about by giving moderate quantities of antigen at a time just preceding the development of hypersusceptibility.

The antianaphylactic state, however, is not lasting, in a period between two and three weeks the animal becomes susceptible again.

HUMAN ALLERGY

The first suggestion that human hypersensitiveness was related to anaphylaxis as observed in animals came from Weichard and from Wolf Eisner in 1905-1906 in their discussions on the subject of hay fever. Meltzer in 1910, on the basis of the similarity between the bronchial constriction of asthma and that observed in animals dying in anaphylactic shock, suggested that true bronchial asthma was a phenomenon of anaphylaxis. Koessler at about the same time, and independently of Meltzer, made the same observation, and in 1913 reported a case of asthma caused by hypersusceptibility to hen's eggs.

While animals can apparently be sensitized only with proteins, human beings can become hypersensitive to nonantigenic, or nonprotein substances, even to nonorganic substances and to physical agents, such as heat, cold, and light as described by Duke.

It is assumed now by most investigators, to use the term anaphylaxis only where there is a positive antigen antibody reaction such as in the experimental animal anaphylaxis, and allergy to be used broadly to include anaphylaxis and also all other altered reactions like serum sickness, drug idiosyncrasies and others.

DIFFERENCES IN ANIMAL AND HUMAN ALLERGY

Active anaphylactic sensitiveness in animals occurs consistently as a result of treatment with foreign protein. In human beings it rarely occurs as a result of treatment, but does occur spontaneously in a large percentage of persons, and often before the patient has had apparent contact with the offending substance.

While no direct experiments were made actively to sensitize human beings, yet there are so many substances, protein and nonprotein, injected subcutaneously and intravenously in human beings without the appearance in any way suggestive of anaphylaxis, except in some cases where individuals become sensitive to salvarsan after a few injections. We have seen that among animals the easiest to sensitize are the guineapigs and that monkeys can hardly be made sensitive, it seems then that humans, anaphylactically, resemble the monkey much more closely than the guineapig. (A biological proof of evolution.)

We have seen that animals can be sensitized passively; that is, if you take the blood of a guineapig that is sensitized to egg and inject it into a rabbit, the rabbit will react anaphylactically to a first injection of egg. Whether men can be passively sensitized is hard to tell because these experiments being unsafe were not attempted. However, Ramirez reported a case where a normal person was transfused with six hundred c. c. of blood from a donor who was horse sensitive. Two weeks afterward, the patient went for a carriage ride in Central Park. Almost immediately upon entering the carriage she experienced difficulty in breathing which developed within five minutes into a marked case of bronchial asthma which was relieved by adrenalin. The asthmatic attack returned again in the evening. The patient was tested with food, epidermals, and pollens which were all negative; tests with a very dilute extract of horse dander, however, gave a hive one and one half cm. in diameter. The donor when tested with an extremely dilute solution of horse dander gave a reaction of six cm. in diameter.

Local passive sensitization, however, was proved to be possible by Prausnitz and Küster and confirmed by Coca and his associates. What we mean by local passive sensitization is this: If we take some serum from a person who is sensitive to goose feathers, and inject it intracutaneously in the arm of a perfectly normal person, that area of the skin will become goose feather sensitive and will give the characteristic wheal and erythema reaction to extracts of goose feathers.

Walzer and Kramer (2) have very ingeniously utilized this phenomenon in the following way. Testing young children, cutaneously or intracutaneously is sometimes an utter impossibility, they fight so vigorously. Also in cases of general urticarias and eczema, where there is no healthy part of skin surface to perform the tests, they take about five c. c. of the patient's blood, the serum of which they inject into the arm or forearm of the mother or of some other normal individual, and instead of testing the patient directly they test the patient indirectly by applying the tests in the area where the patient's serum was injected.

Coca (3) tells of another very clever use that Walzer is making of this local passive sensitization, and this is to prove the gastrointestinal permeability. He sensitizes the skin of a normal person by injecting it with the serum of a patient that is sensitive to some edible protein, such as fish or egg. The individual then ingests some of the specific food and within three minutes to one hour or longer, a wheal with a zone of erythema develops in the passively sensitized site. At the time of the report Walzer was successful with only two proteins.

HEREDITY IN HUMAN ALLERGY

Heredity in animal anaphylaxis plays no part at all. In those cases where the offspring of sensitized pregnant animals has been born sensitized it is simply due to a transmission of the antibodies of the mother to the offspring. In human beings, however, heredity plays an important part in the development of sensitiveness. Cooke and Vander Veer studied the subject of heredity in human allergy very extensively and found that 48.4 per cent. of the sensitive cases have a traceable history of inheritance. According to them a child is not born hypersusceptible but its susceptibility is developed some time after birth. They also found that where both parents are allergic, about sixty-nine per cent. of the children will also be allergic, and their hypersensitivity will develop before their fifth year. In those with a single hereditary history the most frequent age for the development of this condition was between the ages of ten and fifteen years, and in those with a negative history, twenty to twenty-five years was the most frequent age for the appearance of the allergic symptoms.

PERMANENCE OF SENSITIVITY

Anaphylactic sensitivity in animals may last during the life of the animal, but as the life of the animal is short, and as the reaction becomes less marked with time, it is possible that if the animal lived for a long time the sensitivity might disappear completely. Sensitiveness in human beings is apparently permanent, as we know of cases of hay fever and asthma lasting from childhood to old age.

DEGREE OF SENSITIVENESS

Whereas sensitization of an animal may take place under the influence of almost inconceivably small doses of foreign protein—Rosenau and Anderson have succeeded in sensitizing a guineapig with one one millionth of a c. c. of serum—the shock dose must be considerably larger in the average case. This is not the case in human beings. Many persons sensitive to egg, fish glue, or pollen may react violently to the most infinitesimal doses. In a case reported by Baughton a fatal result followed the intravenous injection of one minimum of horse serum. Cooke reported a case where the intracutaneous in-

jection of one one hundredth of one c. c. of fish glue caused death. Duke reports a case where alarming symptoms followed the application of a little glue to the skin, and this in spite of the fact that it was washed off almost immediately.

While human beings, as we have seen, may react to many nonantigenic substances, such as, inorganic salts, silk, wood smoke, gasoline smoke, drugs, and chemicals, they are rather rare; the most frequent causes of human allergy are protein containing substances. By far the largest group responsible for human allergy is plants, especially their pollens which cause seasonal pollen hay fever and pollen asthma; orris root and pyretheum also cause perennial hay fever and asthma. Woodworkers and others who are handling sawdust of box wood, orange wood and many other woods occasionally suffer from asthma due to these woods. Next in importance come animal epidermals and then practically all foods.

Patients may react to antigens either by direct contact or when the protein is brought to the sensitive tissues of the patient by the circulation. What we mean by this is that when a patient is suffering from wheat asthma, an attack will occur either when he inhales wheat flour, where the wheat comes in contact with the bronchial mucous membranes or when he eats wheat bread, in which case the circulation will bring the wheat in contact with the bronchial mucous membranes.

By serum disease we mean the reaction to the injections of foreign serum, characterized by cutaneous eruptions, fever, painful joints, and edema, sometimes there is also albuminuria and with it oliguria.

Changed reactions of the body to various drugs, alkaloids, glucosides, organic compounds, and even to such simple substances as iodine, mercury, arsenic, etc., have been curious phenomena that have puzzled investigators for a good many years. Acquired resistance to drugs, so called drug tolerance, has been known for a long time, and every physician knows the enormous quantities of highly toxic substances that can be consumed by individuals who habitually used them. And just as there exists a drug tolerance, so is there a changed reaction capacity in the opposite direction; namely, a drug hypersusceptibility, a class of conditions grouped together under the term of drug idiosyncrasy.

In bacterial anaphylaxis we have two forms of reaction, one the reaction caused directly by the body protein of the bacteria which is allergic and is the cause of the allergic manifestations, such as asthma and hay fever in focal infection, the other, the reaction caused by bacterial products such as tuberculin, typhoidin, malein, etc. The tuberculin form of reaction is not allergic but inflammatory.

Symptoms of allergic reaction in human beings may be very mild so that there is only slight itching of the eyes, or they may be so severe that death may take place in a few minutes. Severe shock rarely occurs by the inhalation or ingestion of foreign protein; it occurs only as the result of the intravenous, subcutaneous or intracutaneous injections of protein. The following symptoms of reaction are described by W. W. Duke in his recently published book (1).

Shock.—With the onset of reaction, the patient usually complains first of generalized itching followed within a few minutes by pain in the top of the head or in the lower spine or both, and within a few moments by a feeling of total collapse in which the patient thinks he is going to die. Pain in the back and the head may become so severe as to cause the patient to cry out. General erythema and itching become intense. The face and tongue may swell and the patient becomes slightly or markedly asthmatic. Blood pressure usually drops and may reach an extremely low level. The pulse becomes weak and compressible and occasionally almost imperceptible. Upon appropriate treatment with adrenalin and intravenous injection of caffein, if indicated, recovery is usually prompt and complete. Severe reactions untreated, usually show improvement within thirty minutes.

Orbital symptoms.—These include puffiness and itching of the eyelids, slight redness of the lid margins, edema of the conjunctivæ and increased lacrimal secretion.

Nasal Symptoms.—Sneezing and pale swelling of the mucous membrane of the nose associated usually with excessive watery or clear mucous secretion are the usual nasal symptoms. There is occasionally frontal headache caused by pressure in the nasal sinuses or by pain in the top of the head as a direct result of general reaction.

Pharyngeal and oral symptoms.—Itching of the soft palate and pharynx, cough, less commonly edema of the uvula and soft palate, and swelling of the tongue are the usual oral and pharyngeal symptoms. In severe cases there may be swelling of the soft palate which may seriously obstruct respiration and require drastic measures for relief.

Laryngeal symptoms. — These include cough, hoarseness, pale edema of the membrane of the larynx, and epiglottis. This may vary in severity from simple hoarseness and cough to edema which may embarrass respiration and require tracheotomy.

Bronchial symptoms.—These include cough, bronchial obstruction with inspiratory and expiratory wheezing due apparently both to edema of the membranes and to spasm of the bronchial muscles, and the expectoration of clear, watery or mucoid sputum, rich in eosinophiles and often containing Charcot-Leyden crystals. This reaction may vary in severity from slight cough and shortness of breath on exertion, to obstruction so complete as to cause acute emphysema, spontaneous pneumothorax, and even a condition bordering on asphyxia. Patients may become comatose with the color of slate from asthma. Death from asphyxia, however, is rare in uncomplicated cases.

Gastrointestinal symptoms.—The most interesting of the abdominal symptoms is abdominal pain which may be local or general. It is often related to the eating of food and quite frequently appears a few moments after the ingestion of some particular food. The latter history always suggests that the reaction is a result of local contact. The pain may be so severe as that caused by almost any other acute abdominal condition and may cause the patient to writhe in agony. Whereas acute pain is a striking symptom, milder and more chronic pain is commoner. Other alimentary symptoms of interest are abnormalities in the quantity and acidity of the gastric juice, nausea, vomiting, bloating, diarrhea, mucous stools and pruritus ani.

Cutaneous reactions.—Cutaneous reactions may express themselves as erythema, pruritus, urticaria, and angioneurotic edema. Angioneurotic edema may appear on any area of the skin surface and also on some of the internal organs. When it causes obstruction to some important channels, such as the trachea and intestines, serious disturbances and even death may result.

Urologic manifestations (renal colic, irritable bladder).—The symptoms, frequent urination and bladder tenesmus, are rather frequently the result of general allergy, especially in the case of hypersensitiveness to foods. I have observed it in patients following the ingestion of fruits, vegetables, seafood and cereals. The condition may vary in severity from slight discomfort to pain and tenesmus which confine the patient to bed for months. Bladder allergy of long standing may be complicated by infection in which case the symptoms of cystitis obscure the diagnosis.

Hypotension.—Allergy is perhaps the commonest single cause of hypotension, since allergy afflicts probably as many as ten to fifteen per cent. of persons and since a blood pressure of from 90 to 110 is the rule.

Eosinophilia.—Koessler states that a differential count showing eosinophilia in excess of five per cent. is abnormal and that he found an eosinophilia in excess of it quite constantly in hay fever cases.

DIAGNOSIS

Family history.—Heredity is a great factor in human allergy, and if the father, mother or any other near relative of the patient had allergic manifestations, it should aid a great deal in the diagnosis.

Dermography.—Almost all allergic patients show the typical red line upon the slightest scratch.

Adrenalin.—The relief of symptoms by the administration of adrenalin should be a great aid in the diagnosis of allergy.

PROTEIN TESTS

Protein tests are our main reliance in the diagnosis of allergy. In allergic patients the skin is sensitive in a large percentage of cases. A specific protein introduced into the skin will show a characteristic reaction. The reaction consists of an urticarial wheal which has to be at least one half cm. in diameter with irregular edges and an erythema around it. These tests are performed in two ways, the cutaneous, where the protein is applied to a scratch in the skin, and the intracutaneous where the protein is injected into the skin. The intracutaneous tests are more delicate, but there is always the danger of a severe reaction.

As a rule, individuals showing skin reactions to a certain protein will show other reactions to the same protein; when they ingest it or inhale it attacks of asthma, hay fever or other allergic reactions will occur. However, in few cases a person may show strong skin reactions, but no other allergic manifestations. The reverse is also true, in some cases, where we know certain proteins, clinically, to cause asthma or other allergic symptoms and yet skin reactions to this substance will be negative.

TREATMENT OF ALLERGY

The treatment of allergic patients can be summarized in a few words: Remove the offending substance from the patient, or remove the patient from the offending substance. If almonds cause an attack of asthma whenever the patient eats them (and asthma does result from almonds in quite a number of cases) eliminate almonds from the patient's diet and he will be cured. Or if the patient suffers from seasonal hay fever due to pollens, remove the patient from the pollen infested places and the patient will not have any more hay fever.

But this cannot easily be done in all cases. When the offending substances are such important foods as egg, wheat, or milk you cannot very well eliminate them from the patient's diet. Hay fever pollens in season are practically thick in the air with the exception of very high altitudes or on the ocean. In these cases we have to produce a tolerance in the patient to the offending substance. This is done by making an extract of the specific substance and by injecting gradually increasing doses. In most cases we succeed in making the patient tolerant so that he can inhale or ingest the particular substances and yet be free from attacks.

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Diverticulum of the Cardia of the Stomach*

FRANK PEARLSTEIN, M.D.

West New York, New Jersey

Diverticula of the gastrointestinal tract are of occasional occurrence. Those of the esophagus, duodenum, and sigmoid are rather the more frequent; with those of the sigmoid the most usual site in the alimentary canal. In the stomach diverticula are not often encountered, and when present usually affect the cardia, although the pylorus may also be involved. As in other locations this lesion may be congenital or acquired, and may give rise to symptoms or may be dormant, and discovered only in the course of a routine examination of the gastrointestinal tract. Especially is the congenital type liable to be silent, in common with many congenital abnormalities; for it is known that no matter what the congenital defect the patient may go through life without ever subjectively being aware of its pres-

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ence. Of course, provided the abnormality is not incompatible with life.

A diverticulum may be described as a circumscribed more or less rounded pocket or pouch, or a bagshaped protrusion of mucosa from the lumen of

Fig. 1.—The cardiac area of the stomach, showing the diverticulum at "a" and the gas bubble surmounting it at "b" distinct from the stomach bubble.

the gastrointestinal tract. It usually occurs in a location where the muscularis is either anatomically or pathologically weak or absent. Of course the size of the pouch varies, and it may become as large as a pigeon's egg, and in the duodenum a case has been seen where a congenital diverticulum of the second portion attained a size equal to that of the stomach.

The cardiac end of the stomach has a musculature that is rudimentary (1). The longitudinal fibres

Fig. 2.—Oblique view of the cardia showing the communication between the diverticulum and the stomach lumen at "a".

are spread over the cardia, and are grouped adjacent to the curvatures. The circular fibres of the stomach are thick and abundant in the pyloric region, and spread and thin out as the cardia is approached. The oblique fibres in the cardia are likewise thin. So we have an almost flaccid sac of musculature in the cardia, as compared with the pars media and pylorica, and this readily explains the greater frequency of diverticulum in the cardia as compared with the pylorus.

The occurrence of congenital diverticulum is self-explanatory. There is an inborn weakness in the region of predilection, and so when the viscus involved is subjected to its physiological pressure increases the "locus minoris resistentia" "gives" and the lesion is produced. It is interesting to note that the case of Nauwerk, cited by Tupper (2), showed pancreatic tissue at the base of a diverticulum of the stomach, and so he concluded it to be a developmental defect. Undoubteedly the pancreatic tissue found was due to the presence of an accessory pancreas, and it may be mentioned here that an accessory pancreas, when present, is often situated at the lesser curvature of the stomach, and then may give rise to

Fig. 3.—Residue in the diverticulum after eight hours.

the congenital hourglass stomach, and so be mistaken for a gastric ulcer with hourglass contraction.

Acquired diverticulum in the cardia may occur as a result of pressure insults at the site of the lesion, by the trauma incident upon the swallowing of voluminous food masses or foreign bodies; or it may be due to trauma resulting in rupture of the muscularis. Perigastric adhesions with subsequent traction on the gastric wall may produce a diverticulum.

To be sure, there can be no typical clinical picture in this condition. Those diverticula that are acquired will more often give the picture of the primary disease, or the symptom-complex of the causative pathology will overshadow or offset the symptoms produced by the diverticulum. The congenital variety, as mentioned above, may not give rise to any symptomatology to bespeak its presence. Brown's case, mentioned by Tupper (2), gave a history of vomiting fresh blood on a few occasions. Röntgen

examination revealed evidence which was interpreted as being due to a penetrating ulcer on the lesser curvature of the stomach. Operation proved the lesion to be a true diverticulum of the cardia. Other symptoms that may be ascribed to this condition are pain, vomiting, and socalled sour stomach. Few of the reported cases showed hyperacidity.

My case, referred by Dr. D. V. Vitale of West New York, was a woman of forty-three who complained of severe burning sensation in the epigastrium immediately after eating, and sour eructations. Otherwise she had always been well, and there had been no weight loss, pain, or vomiting. Physical examination was negative. Fluoroscopic examination showed a low atonic stomach, and in the cardia a small sac was seen to fill with the contrast substance. Because of its location under the costal arch palpation under the screen was impossible. The illustrations show the pathology very plainly, and it is seen that the sac is surmounted by an air bubble, and that it communicates with the lumen of the stomach. The sac remained filled up to eight hours after the ingestion of the contrast meal. Gray's case (3) showed a residue in the sac up to one hundred and forty-four hours. The stomach showed no delayed emptying, and the rest of the röntgen examination of the gastrointestinal tract was negative. On the above röntgen findings a diagnosis of diverticulum of the cardia of the stomach was made.

The diagnostic points of diverticulum is this region are, the soft contour of the pouch, its pliability (when accessible to direct palpation), its smoothness, and the finding of a residue after the stomach has emptied. When palpation is feasible it is found that the lesion is not tender to pressure.

Clinically, and very often röntgenologically, this lesion is most often confused with ulcer, and differentiation is difficult, and many times impossible. In favor of ulcer, there is the clinical picture, the tenderness of the niche to pressure, the presence of indirect röntgen signs of ulcer, as residue, hyperperistalsis, spastic incisura, or organic hourglass. Withal, diverticulum is a condition which is extremely rare in the stomach, but it should be kept in mind when lesions of the cardia are considered, for ulcer in this region is very uncommon.

A thorough review of the literature brings out only thirty-eight reported cases of diverticulum of the stomach, and for this reason I believe that it is of sufficient importance and interest to add this one to the few already in the literature.

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A Statistical Study of the Diagnostic Value of Hypoacidity

WILLIAM W. SAGER, M.D.
and HOWARD R. HARTMAN, M.D.
Rochester, Minn.

Four hundred and twenty cases were selected in which hypoacidity was present, all other factors being disregarded. The free hydrochloric acid varied from 4 to 20. The statistics were then analyzed to show the frequency of occurrence of various diseases in the series. Much work has been done since the practical introduction of the gastric analysis to the medical profession about 1870, on the degree of acidity or the presence of anacidity, associated with various diseases. Here our object is to show how great a degree of frequency we may expect of any one disease in a group of cases selected solely because of the presence of a subnormal concentration of free hydrochloric acid in the gastric contents. The cases selected were those in which the stomach tube had been used once following the ingestion of an Ewald testmeal one hour previously.

In a previous paper 492 cases of anacidity were similarly analyzed. Such results as are of value for the purpose of contrast or comparison will be given.

In the analysis of this group of cases, some difficulty arose from the complexity of diagnosis. That assigned when the patient came to the clinic was not always in harmony with, or did not always account for other complaints, which were, however, most frequently of minor importance. For purposes of grouping, that diagnosis was assigned which explained the symptoms from which relief was sought. If, however, malignant disease or disease of the gallbladder was diagnosed, the case was grouped under those headings, precedence being given in the order named.

Functional nervous disease.—One hundred fifty-eight cases were of functional nervous disease (37.6 per cent.). Various interpretations of this large number of cases may be given. The part played by the emotions in producing partial inhibition, as pointed out by Venables and others, the effect as pointed out by MacDaird, Campbell and Hern, of the sedentary life and reduced physical fitness of many of the patients of that type, the fact that only one analysis was made, the second frequently showing slightly higher quantities of acid, all probably have a bearing on the incidence of hypoacidity in cases of functional nervous disease, and the occurrence of so high a percentage in this series. Another factor to be considered, as pointed out by Bennett in discussing hypoacidity, is the presence of hypochlorhydria in persons in perfect health. This series shows a marked increase in the cases of functional nervous disease compared with a similar group in the series of 492 cases of anacidity studied. In the earlier series only eighty-seven cases of functional nervous disease were found.

Cholecystitis.—There were sixty-seven cases of cholecystitis. It is generally stated that there are changes in the gastric acids associated with disease of the gallbladder, although there is a difference of opinion as to the degree of solidity most often found. Gatewood, Leva, Rhode and others have found hypoacidity and anacidity most common in cases of cholelithiasis and cholecystitis. Gatewood, in reviewing a series of 192 cases of disease of the gallbladder, found achlorhydria or hypoacidity in forty-five per cent. Griffiths and Simitsky have said that hyperacidity and hypersecretion occur in disease of the gallbladder, Griffiths attributing this abnormality to a vagal reflex. In comparing the percentage of cholecystic disease found in this series with that found in the series of anacidity studied, very little difference is found. The percentage in the series of anacidity was 18.11; in this series it was sixteen.

Malignant disease.—There were seventeen cases of unquestioned malignant disease. One case that should be included was questionable but probably malignant. Of the seventeen cases, twelve were carcinoma of the stomach; one was multiple malignant disease of the abdomen, one carcinoma of the umbilicus, one carcinoma of the esophagus, one carcinoma of the transverse colon, and one abdominal carcinomatosis. The case in which the diagnosis was questionable was one of a large abdominal tumor, that was probably malignant but was not operated on.

A brief mention of some of the work done on the relationship of malignant disease of the stomach and acidity is of interest here. One of us observed, in reviewing a large number of cases, that free hydrochloric acid was found in about one half. This work was corroborated by Friedewald and Bryan later. The situation of the malignant neoplasm in the stomach, according to Hartman's findings, did not influence the degree of acidity. In a review of eighty cases it was found also that a patient with resectable carcinoma of the stomach has a forty-four per cent. chance of living five years after operation if anacidity is present. The chance of a similar patient with free hydrochloric acid present in the gastric contents is only half as favorable.

From a diagnostic viewpoint, the foregoing results are interesting. In the series of cases of anacidity previously referred to, there was found a 20.53 per cent. chance of malignant disease being present, while in the present series there is but a 3.1 per cent. chance.

Miscellaneous cases.—In contrast to the results obtained in the analysis of cases of anacidity, no cases of pernicious anemia were found. In the cases of anacidity, 11.57 per cent. were cases of Addison's anemia. In the present series twenty-eight cases of peptic ulcer were found, one of gastrojejunal ulcer, and one case in which the diagnosis of peptic ulcer was questionable. This shows a decided increase, as was to be expected, over the percentage of ulcers found in the cases of anacidity. Thirteen cases of syphilis were found. This group included but one case of gastric syphilis.

The remaining cases were scattered and probably only accidental, having no relationship to the hypoacidity other than a coincidental one.

TABULATION

DIAGNOSTIC DISTRIBUTION OF 420 CASES OF HYPOACIDITY

	Cases
Functional nervous disease	158
Cholecystitis	67
Malignant neoplasm	17
Questionable malignant neoplasm	1
Peptic ulcer	28
Gastrojejunal ulcer	1
Questionable peptic ulcer	1
Syphilis of the central nervous system	9
Gastric syphilis	1
Visceral syphilis	3
Chronic constipation	18
Appendicitis	11
Paroxysmal tachycardia	2
Hypertension	5
Dysmenorrhea	1
Goitre	9
Gastroenteritis	1
Epilepsy	2
Septic tonsillitis	1
Hernia	4
Arthritis	8
Amebiasis (Entameba histolytica)	1
Diverticulum of sigmoid	1
Nephrolithiasis	1
Glomerulonephritis	1
Incomplete abortion	1
Psychosis	2
Salpingitis	3
Uterine fibromyoma	3
Postinfluenzal debility	1
Cardiac extrasystoles	1
Pancreatitis	2
Retroversion of uterus	1
Pyonephrosis	1
Osteomyelitis	1
Angina pectoris	2
Endocarditis	1
Pulmonary tuberculosis	2
Lymphosarcoma	1
Nicotinism	2
Arteriosclerosis	2
Tuberculous peritonitis	1
Tumor of the bladder	1
Prostatitis	2
Pregnancy	1
Oral sepsis	2
Prolapsed ovary	1
Chronic intestinal obstruction	1
Myxedema	1
Chronic myocarditis	1
Mental deficiency	1
Secondary anemia	1
Indeterminate	26
Negative examination	3

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Gallstones*

EDWARD L. KELLOGG, M.D., F.A.C.S.

New York

(*Concluded from page* 102)

It may be most readily demonstrated between the two heads of the sternomastoid muscle where the nerve lies most superficially as it turns around the anterior scalenus muscle (Mussy's point).

Gallbladder tenderness may be elicited by hooking the fingers under the ribs in the gallbladder region: by pressing deeply, while the patient takes a deep breath (Murphy): or by jarring percussion, produced, by holding one closed fist firmly against the costal margin, while it is struck sharply with the other. Jordan-Lloyd use a "deep prod" with the closed fist, over the gallbladder region, while Pottelschek places the four fingers of the right hand, passively, over the region to be explored, and presses them down firmly with the fingers of the other hand. It may be possible to outline the fundus of a distended gallbladder by percussion, to recognize a peritonitic rub by auscultation, and to determine the fixation or restriction of the side by inspection.

Muscular rigidity and skin sensitiveness are usually found upon palpation of the right hypochondrium, the maximum tenderness at the point where the ninth intercostal nerve penetrates the rectus muscle (on a line, just below the osteochondral junction of the ninth rib, horizontally towards the median line). These signs are present during the attacks and may persist for an indefinite period.

The gallbladder may become distended with obstruction of the cystic duct. In common duct obstruction it is usually contracted if due to a calculus, but distended if caused by malignancy, or outside pressure (Courvoisier's Law).

Enlargement of the liver has been described by Charcot and Naunyn as being seldom absent, while Kehr considers it uncommon, Ortner believes that many cases of stone in the common duct cause enlargement of the liver without other symptoms. It is certainly not uncommon to find the liver palpable at examination and moderately enlarged at the operation, although in cases of long duration it may be contracted. In Tietze's observations made by sectioning the liver at operation (3) the specimens always showed pathological changes varying from a leucocytic infiltration around the bile capillaries to acute yellow atrophy and biliary cirrhosis.

RÖNTGEN RAY

Improvements in x ray technic are responsible for the growing importance of this method of diagnosis. Direct demonstration of gallstone shadows can hardly be expected in fifty per cent. of the cases, when we consider their usual composition. The indirect findings, shown by adhesions distorting the cap, duodenum and hepatic flexure of the colon, or in the outline of a distended and thickened gallbladder, furnish valuable information of gallbladder disease but not necessarily of gallstones.

Palmer (4) finds that the presence of direct and indirect evidence is sufficient to establish the diagnosis in ninety per cent. of the cases.

While this may be usual in the work of certain röntgenologists, it hardly agrees with the experience of individual surgeons, particularly with reference to gallstones as distinguished from cholecystitis. It is certain, however, that recent advancement in the demonstration of the gallbladder shadow and of gallstones by the administration of tetraiodophenephthalein prior to examination greatly increases the proportion of positive findings.

LABORATORY FINDINGS

The laboratory findings are of limited value. A gastric hypochlorhydria with symptoms suggesting ulcer, is often due to gallstones. Absence of bile from the stools will help to differentiate obstructive from hemolytic icterus. Minute traces of bile in the blood may be detected by Hamil's method (5).

A capillary tube is filled with blood, sealed at both ends, and allowed to stand in a vertical position, until the serum separates from the clot. Examined against the light, it will show a yellowish tint if the slightest trace of bile is present.

Recent experiments made by Dr. A. V. St. George and Dr. A. Lincoln Brown of Bellevue Hospital have resulted in the development of a simple method of determining the icteric index of the blood serum which is of great value as a diagnostic procedure.

Hyperchlosterinemia is suggestive in cases with symptoms of gallbladder disease.

By Lyon's method of bile tract drainage, it is possible to obtain the gallbladder bile and to determine the presence of mucus, pus blood cells, epithelium, crystals and bacteria. So much has been said in criticism of this procedure, that I wish to emphasize its value, when carried out with Lyon's careful technic. Early microscopical examination is essential, as the sediment is soon destroyed by the pancreatic juice. In cases in which the digestive symptoms dominate the clinical picture, without apparent involvement of the biliary tract, and in the differential diagnosis of gallstones and ulcer, it is of great value.

It shows the infection of the biliary tract but does not prove the presence of gallstones.

COMPLICATIONS

Gastric complications may mask the lesion. Developmentally, the liver and its appendages are an outgrowth of the digestive tube immediately below the stomach, and the nerve centres in the cord are contiguous. Severe stimulation of one is easily transmitted to the other. The stomach is more susceptible to stimulation than the gallbladder, which accounts for the gastric symptoms frequently being first observed (McKenzie). Gastrospasm and pylorospasm occur. The latter is found frequently and is the source of pain in some instances. The pyloric ring

*Read before the Rockland County Medical Society. From the Department of Gastroenterology, New York Polyclinic Medical School and Hospital.

may become so hypertrophied, as to require surgical attention. Failure to relieve this complication is responsible for the persistence of symptoms in some cases after operation.

Adhesions may obstruct the pylorus leading to dilatation and retention.

Secretory changes are important. Kaufman states that hyperacidity is the rule, while Cohn (6) declares that subacidity is an almost constant symptom, that achlorhydria is a characteric result of obstruction of the gallbladder by stone, and that after cholecystectomy it is permanent. These findings do not agree with the conclusions of Ohly (7) but it is probable that absence of hydrochloric acid may predispose to the formation of gallstones by favoring infection of the duodenum and bile ducts.

My observations lead to the conclusion that gallstone disease in the sthenic individual of middle age is often accompanied by hyperchlorhydria, but with advancing years, the hydrochloric acid may diminish or entirely disappear, possibly due to exhaustion from over stimulation.

Obstruction of the duodenum is rather frequent and adds to the symptoms of pyloric obstruction, the copious regurgitation of bile, or gives rise to the typical symptoms of duodenal stasis and toxemia.

Fistula between the gallbladder and duodenum may lead to the discharge of calculi. One such case has come under our observation at Gouverneur Hospital. Stones discharged by this route may lodge at the inferior angle or at the duodenojejunal junction, in the lower ileum or colon causing obstruction.

INTESTINAL COMPLICATIONS

Acute or chronic appendicitis is a frequent complication. It may be due to a spread from one to the other by hematogenous or lymphatic routes, but in many instances there is probably a common cause in stasis and infection of the right colon. The differential diagnosis is difficult, when the appendix occupies an abnormal position in the liver region. If adhesions have not formed, inflation of the colon may cause a painful appendix to change position. Leucocytosis points to the appendix rather than to the gallbladder.

The pain of colitis occasionally simulates cholelithiasis. Examination of the stools and the increased discomfort upon inflating the colon, renders the diagnosis clear.

Obstruction of the intestines, by gallstones, was reported by Morestin, in 242 collected cases (1906). The stones usually became encysted close to the ileocecal valve.

Fistulæ between the gallbladder and colon occurred fifty times in Naunyn's group of 384 cases (of fistulæ).

Pancreatitis was found by Mayo, 141 times in 2200 gallbladder operations. Opie's experiments show that it may follow obstruction of the ampulla of Vater, by a calculus, with regurgitation of bile into the pancreatic ducts, but it also occurs without evidence of obstruction.

In Rosenow's experiments, the incidence of pancreatitis following injection of strains of bacteria from cholecystitis was five per cent. Deaver believes that it may be caused by lymphangitis.

During the presence of a calculus jaundice, the sudden occurrence of acute epigastric pain, muscular rigidity, nausea, vomiting and collapse, without leucocytosis, suggests acute pancreatitis, caused by stone in the ampulla of Vater (Murphy). In the less acute cases, the most important subjective symptom is colicky pain in the upper abdomen, radiating to the left costal arch, spine and left shoulder, accompanied by swelling at the side of the pancreas. A pale green discoloration of the skin has been described, around the umbilicus and in the lumbar region, which gradually disappears. Hematemesis may occur.

In chronic cases information is obtained from the fatty stools, alimentary glycosuria, and possibly the Cammidge reaction.

By direct examination of the pancreatic juice, obtained with the duodenal tube, it is possible to determine the presence or absence of the ferments and to estimate their activity.

CANCER

Cancer may result from the irritation of gallstones. Schroeder, in 1150 autopsies, found 141 cases of gallstones and in twenty of these there was cancer of the gallbladder or ducts.

Keay reported fourteen out of 149 cases of gallstones at Guy's Hospital.

Lichtenstein has called attention to the importance of enlargement of Virchow's gland (behind the clavicular attachment of the sternomastoid muscle) in differentiating malignant, from gallstone obstruction, of the common duct. Kehr adds to this, the enlargement of the jugular glands.

TREATMENT

Medical treatment is indicated—as a prophylactic, when one or more attacks of catarrhal icterus have occurred: following operations with a return of indefinite symptoms: for elderly people and those having constitutional conditions greatly increasing the risk of operation, such as high blood pressure, advanced kidney or heart lesions and threatened apoplexy. Normal bile is the only effective gallstone solvent in the human body.

It is desirable to maintain a continuous and copious excretion of bile, and as food stimulates gallbladder contraction, four or five small meals are given daily and a little milk, during the night.

A glass of beef tea is given before retiring since the extractives are active biliary stimulants.

The foods to be avoided are those rich in cholesterin and those which easily ferment, such as eggs (the yolk contains one half per cent. cholesterin), fats, butter, cream, spiced foods, fried foods, brains, sweetbreads, liver, kidneys, goose, duck, game, stews and gravies, fat fish, such as salmon and blue fish, peas, beans, lentils, pies, mayonnaise, alcohol, coffee and cocoa.

Those allowed are roast and grilled meats, free from fat, cereals, vegetables (except those prohibited), fruit, skimmed milk, bread in moderation, alkaline mineral waters, clear weak tea.

Water thins the bile but should not be taken iced. Two glasses of hot water may be given an hour before meals. Keay recommends two quarts of water by rectum on alternate days, to be retained as long as possible.

Strong purgatives should be avoided, but the

bowels may be regulated by giving the natural or artificial Carlsbad Sprudel salts in hot water twice daily.

Glycerine (pure and neutral) is said (by Mayor) to be a powerful cholagogue and helpful in colic. He states that a relatively large dose (three quarters to one ounce) will frequently terminate an attack, and a dose of one sixth to one half ounce daily in alkaline mineral water tends to prevent recurrence.

Olive oil aids by diminishing hyperchlorhydria and stimulating the flow of bile.

Sodium salicylate and the bile salts (sodium glycocholate and taurocholate) stimulate the secretion of bile. The salicylate is also an effective anodyne in some cases and is said to reduce the size of the liver and to act as an antiseptic.

Mercurials, podophyllin and medicinal soap increase the excretion of bile.

Sodium succinate prevents attacks of colic for long periods of time, probably by thinning the bile.

Hexamethylanimin (urotropin) is recommended for its antiseptic effect. (How it acts in an alkaline medium is not explained.) It is given in solution, two grains to the ounce of water and sipped slowly during the day (up to seventy-five gr.).

Duodenal irrigations and bile tract drainage are of considerable value but must be used regularly.

During an attack there is no substitute for morphine and atropine hypodermatically, with cautious inhallation of chloroform.

Some relief will be obtained from continuous warm baths or hot stoupes applied to the liver region.

Leuboullet recommends an enema of antipyrine and laudanum.

SURGICAL TREATMENT

When we consider that with stones in the gallbladder, the operative mortality is from three to five per cent. and that the complete surgical cures are seventy-five per cent. or higher, while according to Naunyn medical treatment shows forty per cent. of cures and a mortality of 4.6 per cent., there is little justification for postponing surgery, with the possibility of stones lodging in the common duct, increasing the mortality to forty-five per cent.

It is my belief that all cases of gallstones should receive prompt surgical treatment, even when discovered by accident, and in the absence of symptoms, excepting only those in which there is an unusual hazard in operation and a ready response to treatment.

The following points I deem important: free incision, adequate drainage, a vertical incision in the favorable case, sparing the eighth and tenth nerves if possible: a Mayo-Robson or Bevan incision when necessary, the upper angle being carried as close as possible to the costal arch and extended quite to the median line to favor rotation of the liver.

Cholecystectomy is the choice of most surgeons in uncomplicated cases, but the last word on this subject cannot be spoken until we understand more fully the function of the gallbladder and the cause and ultimate result of the dilatation of the bile ducts after cholecystectomy.

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48 West Fifty-first Street.

Rejuvenation

MALFORD W. THEWLIS, M.D.
New York

Old age being characterized by degenerative processes, we must give our attention to the prevention of their premature occurrence; nothing will regenerate the organs, but it is possible for degenerated organs to function in harmony as they do in normal old age. These senile mutations are not due to diminished secretion of the interstitial cells, as many have claimed; thyroid, anterior pituitary and suprarenal changes are as much involved as are those of the testicles. Factors such as chronic intestinal autotoxemia and focal infection undoubtedly help to hasten senile degenerations. Changes in the testicles seem to have somewhat monopolized attention, yet they are no more important than are the changes in other organs.

If old age were due to this diminished internal secretion of the gonads we could accomplish a great deal through endocrinology; the problem is not so simple. So many factors determine these senile changes that we must study the situation from every angle. Diseased conditions such as focal infection, disturbances of metabolism, to say nothing of syphilis, tuberculosis and chronic intestinal autotoxemia play an important part. Diet, exercise, occupation and heredity, the mental state of the patient and his economic position, all have to be considered. An old man may be dependent upon his children because he is unable to work. Obsessed by his years and impending doom, he loses interest in life and this is reflected in his appearance. He is slovenly, his facial expression is worn, he does not try to hold himself erect, nor to walk steadily; he stoops and shuffles along. His children pay little attention to him; since he has no money he feels dependent, in short, he is drifting and submissive. If we knew his actual anatomic changes probably we should find no more degenerative processes in his structure than we should in another man of the same age, one who is active physically and mentally.

The word rejuvenation has always fascinated the

public and the lay press well knows it. The slangy expression "monkey glands" has too often been hurled at ridiculed ancients. There is no reason at all why Steinach's or Voronoff's notions should be printed in books for the layman; the proper method of broadcasting scientific theories is before academies of medicine or through medical journals.

Steinach's operation (1) was brought before the laity at a time when medical literature was scarcely aware of it. Since it was not practical for women, Steinach devised an x ray treatment which was said to accomplish the corresponding rejuvenescence. Steinach's experiments on rats have never been confirmed and one observer said that the animals were afflicted with scurf (which gave them the appearance of senility) of which Steinach's care cured them.

Considering the degenerative changes inherent to old age, we must realize that thus far nothing has been found that would correct them. In senility every cell in the body is involved and we know that these cells, especially those of the nervous system, cannot regenerate. To quote Child (2), "Some degree of rejuvenescence occurs, even in man, and different tissues differ as regards their capacity for rejuvenescence, the central nervous system being apparently least capable of regressive changes. This characteristic of the nervous system suggests the probability that the natural or physiological length of life in these forms is determined primarily by the length of life of the nervous system and that physiological death is primarily the death, the final state of senescence, of the nervous system.

"Physiological or natural death is not something which has originated in the course of evolution from the lower to the higher forms. All organisms, from the lower to the higher, from the simplest to the most complex, undoubtedly die of old age, unless senescence is compensated by rejuvenescence. In the lower forms the death point may never be attained under the usual conditions because the low stability of the substratum and the consequent low degree of individuation permit the frequent occurrence of a high degree of rejuvenescence. In the higher forms death becomes inevitable and necessary because the capacity for rejuvenescence is limited by the greater stability of the substratum. For this high degree of individuation man pays the penalty of individual death, and the conditions and processes in the human organism which lead to death in the end are the conditions and processes which make man what he is. The advance of knowledge and of experimental technique may make it possible at some future time to bring about a greater degree of rejuvenescence and retardation of senescence in man and the higher animals than is now possible, but when we remember that the present condition of the protoplasmic substratum of these organisms is the result of millions of years of evolutionary equilibration, we cannot but admit that this task may prove to be one of considerable difficulty."

Ancel and Bouin, about twenty years ago, advanced the notion that a man's virility was due solely to the secretion of certain cells in the testes. However, this has never been proved. Steinach called these cells the puberty gland. We know that Leydig's cells are not the only factor influencing virility. Steinach's idea is that at the cessation of activity of these cells, man becomes senile and at their renewed stimulation, he regains his youth. The Steinach operation consists of the tying of the ductus deferens combined with vasectomy. His idea is that the tying of the duct (not removal alone) causes, through back pressure and later inactivity, a wasting of the generative portion of the testis, with subsequent reproduction of the socalled puberty gland, consisting mainly of the interstitial gland (Leydig's cells). The increased formation of the gonadal secretion reactivates the entire endocrine system of the patient, causing clinical results, varying from nothing more than an endocrine tonic to an almost actual rejuvenation (Benjamin) (3).

Benjamin, like many others, assumes that senility is due to a natural occurrence, that is, to an acquired lack of gonadal activity (primarily or secondarily) with an accompanying disturbed function of the other glands. If this occurs early in life he speaks of premature senility. He asserts that the Steinach operation reactivates the endocrine system in the sense of stimulation, regeneration and the restoration of equilibrium. Few will uphold these suppositions.

Steinach's operation accomplished the same thing as does the operation of vasectomy performed several years ago for senile prostatic hypertrophy. While some observers now claim that they are obtaining good results from Steinach's operation, the actual evidence is that the closing of the seminal ducts does not rejuvenate an old man. Moreover, there seems no good reason to believe that we will ever accomplish this. No doubt some improvement follows these operations, because of the psychic stimulation; without doubt increased gonadal activity will produce temporary results in some instances, to be followed later by a hastening of senile degeneration. So that, in fine, the operation may do actual harm.

Steinach's method of operation is said to disclose a new principle; it is, however, a simple removal of the duct or its equivalent. Since the procedure is a simple one, why do not our surgeons perform it as a routine? They are always willing to grasp new methods. The reason is obvious; it does not ring true to their surgical judgment; it does not seem logical to them that the method will accomplish its purpose.

Destruction of the thyroid gland, anterior pituitary body or suprarenal cortex causes a loss of sexual power as does castration; it will be seen, therefore, that sexual weakness is not entirely due to the testes.

Steinach showed that it was more difficult to rejuvenate women and devised an x ray treatment which he applied to the ovaries, under certain conditions, which he thought would cause rejuvenation. Steinach believed that the female puberty gland was stimulated to greater activity by the x ray. The revitalizing effect achieved is said to be analogous to the result of the Steinach operation in man. According to the disciples of this theory, stimulation doses "must not be used too long as they may destroy the tissues." The most favorable period is said to be the menopause. Steinach believes that the x ray causes the sensitive gland to waste, leaving the sturdier interstitial or puberty gland intact. Besides

the x rays, Kammerer adds the use of heat for treating the condition.

Holzknecht claimed cures with x rays in women suffering from complaints incident to the menopause and for hemorrhage from the uterus. He noted remarkable rejuvenation. Wrinkles disappeared, the face of the patient rounded out and the skin was more elastic; the signs of rejuvenescence as in men after the performance of tying of the duct.

Kammerer (4) notes that the stimulating exposure results in nothing more than a withering of the Graafian follicles but should not endanger the interstitial tissue. Very weak exposures are gradually intensified until the desired result manifests itself. According to Kammerer, "Persons working in an x ray laboratory for years, physicians and nurses for example, have noticed that their inner secretion is stimulated and effects are brought about which, in general, resemble the effects of a rejuvenation treatment by x ray."

These notions advanced regarding x ray are directly counter to those of other scientists. Albers-Schonberg, Bergonie, Tribondeau, Regaud, Dubreuil, Gordan, Simmonds and many others claim that the x ray is detrimental to the male genital organs. Many observers have recorded the absence or the infrequency of spermatozoa in the semen following exposures of various degrees to x ray. It is a well known fact that sterility is common in x ray workers.

Moreover, according to Kammerer, the technic is so complicated that we must be supermen in order to apply it. We have röntgenologists, it is certain that it would be a simple matter for them to give the treatments, especially with the instruments of precision now available in modern x ray apparatus. Why is the technic kept a secret by the few men who are doing the work? Vasectomy is a comparatively simple procedure and certainly a few exposures to x ray would not be difficult.

It is asserted that no deaths have been reported to follow this operation. However, Mendel (5) noted after the operation that one of his patients had a psychosis with serious sexual irritability and sexual hallucinations followed by death. He warns that it is not without danger; that the operation causing a rejuvenation of the interstitial cells has never been proved and that experiments on rats cannot take the place of human experiments.

Schmidtgen and Cruber (6) noted that the so-called rejuvenation following the operation was not real; but it was a return of sexual desires. They believe that the operation is not justified; that it has never been proved that an animal lives longer after operation than it would have lived without it.

Wolbarst (7) notes that in senile patients the Steinach operation may cause a marked decrease in blood pressure and a feeling of well being. When the sex function has been extinct the operation has had no influence. In premature senile cases, according to him, there is no reason to believe that sexual functions have been stimulated. He further states that the operation is painless, involves no risk and but little loss of time.

Robert Oslund (8) by careful experiments, has found that the operation as performed by Steinach does not accomplish what has been stated for it.

There seems to be no end to Kammerer's faith in Steinach's operation (9). Among the cures he includes mental senility, improved memory and a faculty for retaining figures, names and faces. Deafness and eyesight improved; the skin became fresh and rosy, while the wrinkles disappeared. Bald men with very little hair have been observed to gain a downy growth which steadily becomes longer and thicker. The nails are stimulated to new life, kidneys and prostate are in better condition. Pernicious ulceration and cancer are said to be relieved. Kammerer states that cancer is due to old age and that rejuvenation cures it. One might ask why we may see malignant disease at the age of puberty. Kammerer also states that tuberculosis in rats was improved even when both lungs were almost completely destroyed. The operation brought about regeneration of tissues of the lungs. Brown-Séquard surely made no more claims for his panacea!

Gland transplantation has been an interesting study and several careful observers have noted satisfactory results, both in men and women. In 1921, Hammond and Sutton (10) reported a case of sex gland transplantation, the gland being taken from a subject who had just died of hemorrhage from rupture of the liver. G. Frank Lydston (11) was the first one who performed the experiment on himself. He claimed that the vitality of the component cells of the various tissues and organs is preserved after bodily death, the glands being preserved by refrigeration. In the transplantation performed on himself the material was taken from a subject eighteen years of age, who died seventeen hours before. On the eighth day the implant appeared to be a failure and Dr. Lydston asked Dr. Michel to remove the implanted tissues. On removal, the gland split, one half remaining attached to the tissues. Lydston asserted that as long as a vestige of gland remains, the secretion was formed and absorbed. He concluded that the manifestations of senility can be retarded and longevity probably increased by secretions resulting from gland implantation. In one case the previous gray hair upon the arms and breast and almost entirely gray eyebrows and beard became darker within a few weeks. Lydston believed that the operation was of great value for arteriosclerosis when not too far advanced. He reported cases (12) dating five years back in which the results were sustained.

H. Lyons Hunt (13) noted good results from sex gland transplantation. He has performed eighty-four operations and had only eight failures; two showed reaction and six were nontakes. He found that not only rheumatism but neuritis yielded satisfactory results in eighty per cent. of the cases. Hunt uses sheep's ovaries and ram's testicles for the transplants. In cases of actual senility he found that the mental processes waxed stronger; that memory, deafness and eyesight improved and that the procedure was successful in ninety per cent. of the cases.

Steinach believed that autotransplantation worked well and that it was not necessary to reinstate a detached gland at the very spot from which it was removed. He believed that as long as the transplantation was within the same organism there resulted a certain rejuvenation of the gland. He believed it

worked best in cases of premature senility; that by means of the reproduction of the interstitial tissue, which started as soon as the gland's abode was changed, a surplus of vitalizing tissue was formed which brought about rejuvenescence.

Voronoff (4) employed apes' glands in his work, while Brinkley said that he was the first to use goat's glands. Brinkley (15) said that arteriosclerosis as well as high blood pressure was returned to normal in 100 per cent. of the cases. We have heard nothing more about this interesting subject lately.

Tuffier, Paris, implanted ovarian tissue freshly removed from young women and transplanted it in twenty who had passed the menopause and in not one of them was there a return of menstruation or other evidence of rejuvenescence. Most of his 230 operations were autotransplants, removal of ovaries from the pelvis to other locations in the same woman. in the majority of women under thirty menstruation was reestablished but in only one of fifty-six over forty did the flow reappear. He believed that the results of autotransplants of ovaries were transient and he records no successful results from grafting from one woman to another. In many instances these transplanted tissues are found after months as a foreign body.

Robert T. Morris (16) in 1906 performed transplantation of ovaries with one apparent success. He reported the birth of a child in a woman from whom he removed the ovaries and in whom ovaries from another woman were grafted four years before. Morris was the first one to perform the operation and the first one to discontinue it, believing that good results would occur so seldom that the operation was not justified excepting in homoplastic work.

We have no conclusive evidence that sex gland transplantation will cause more than a brief rejuvenation. The number of cases reported in the literature are not many and it is necessary, before heralding a lasting cure, to have made observations over a long period of time. One physician reported twenty-two cases with excellent results while others are able to report as many in whom the results have been equally as good from other measures, such as from psychic stimulation, change of scene, change of mode of living, and association with younger people. Anyone who sees many aged patients will recall the same phenomenon. A transitory effect from gland transplantation often occurs until absorption of the transplant follows. Commercial extracts of a number of glands when taken by mouth give practically the same results as graft.

To show what sometimes occurs in old people: a man, aged sixty-five, had every appearance of being much older and was gradually failing; he met a widow of fifty whom he had known several years before and she became interested in him and they married. She happened to be comfortably situated financially and gave him a home and a substantial allowance each month. His rejuvenation was apparently as satisfactory as Steinach's method is supposed to be.

His interest in life increased, he took excellent care of his personal appearance. He walked daily, read interesting books, went to the theatre and even learned to dance. His appetite improved and he gained in weight; exercise in the open air improved his health; he regained his sexual powers and fortunately he was not obliged to undergo any special treatment.

We often see men of this type. Another patient, a professional man, rejuvenated himself; he analyzed his own case and found that he was becoming senile at fifty-five. He immediately changed his mode of living and determined to grow young again. Instead of associating with old people as he had, he saw only younger ones. He walked four or five miles a day, quickened his pace and held his body erect. He was careful of his personal appearance; he frequently attended the theatre, preferring musical comedies because they were cheerful. He learned to dance and several times a week danced with younger people. The change brought about was remarkable; he walked so fast that younger people had difficulty in following him. It was apparently a case of actual rejuvenescence; his sexual powers returned. This occurred about ten years ago and he is as young in appearance and action today as he was then. Is this not as encouraging as the reports from enthusiasts of gonadal transplantations?

Many physicians could relate as many cases of apparent rejuvenescence of senile patients due to change of their mode of living, together with a change of their mental attitude, as can the average observer as proof of the Steinach operation.

Nothing causes ageing more than worry, care, mental depression, with consequent mental deterioration. According to our findings on physical examination, many people are apparently older than they should be. It is due to psychic causes, usually a recognition that old age is present; this leads to a psychic depression which causes physical inactivity and lessened metabolic activity and slowed circulation. Psychic stimulation is one of the most valuable weapons we possess in treating the aged and psychotherapy will often accomplish as much as gland transplantation. In my opinion these surgical procedures affect the patient psychically quite as much as they cause him to grow young through the absorption of an internal secretion from a grafted testicle or ligated vas deferens. The advocates of these procedures usually add in their writings that the patient did not know that the operation was being performed and while this may be true in some instances, I believe the psychic effect is as important as the operation itself.

It should be remembered that increased sexual activity after the age of sixty is likely to bring about cerebral changes, apoplexy and angina pectoris. Occasional sexual intercourse can do no harm and we often find old men who improve in sexual power as a result of exercise and a change in the mode of living. Sometimes a younger woman will cause an old man to have an acute interest in life and completely change his mental and physical condition. Stimulation of a sense of pride and the will to live will materially help to solve many problems of old age.

The thoughts of a surgical operation that will rejuvenate a man must be considered from a psychic standpoint. When hope of rejuvenation is given, the old man immediately sees new horizons before him; he feels that he can live longer, that life can be made more interesting to him and that he may be of some

use in the world. Does it not seem that this psychic effect has as much bearing on the cure as has the operation itself?

Hope is the strongest psychic stimulant known and by encouragement we can materially assist patients in recovering from pneumonia and other diseases, besides giving them an entirely new aspect toward life. We are told that many of these operations have been performed without the patient's knowledge; they were done and improvement noted. About 1890 vasectomy was performed on elderly men all over the world in order to improve the prostatic condition. One of Steinach's disciples said that the reason why many were not improved by the operation was that the old men did not expect to be rejuvenated—therefore were not!

It seems to me that no ground is being gained in this direction of preventing premature senility by operation or x ray therapy. Newspaper reports are not to be encouraged to take the place of communications at medical meetings or through medical journals. No doubt in some instances gland transplantation has worked well for a while and the patients to use it on are young men who have lost their testicles through some accident. Morris showed a patient before the New York Surgical Society who had lost his testicles from mumps. A graft underwent absorption but had the effect of stimulating the minute remains of the testicle into new growths to half the size of a normal testicle. Even in some of these cases the results have been very unsatisfactory (17). Evidence seems to be accumulating to discredit all of these procedures. Steinach's notions have been contradicted by H. Stieve, Karl Sternberg, Professor Zeissl and others. Haubenreisser noted no effect from x ray therapy. All in all we have many guesses which are not substantiated.

On the other hand there are other measures which scientifically tend to offset premature senile changes. We especially refer to the prevention of infectious diseases in earlier life, the discovery and correction of focal infection, careful attention to the treatment of chronic intestinal poisoning, the prevention of cardiorenal disease. Besides these, occupation, pleasant surroundings, economic independence and more attention to the aged when ill, a general interest in the preservation of the elderly (gericulture) and a reasonable percentage of the attention ordinarily given to child conservation will invest old age with mellowness and a great degree of pleasure. Added to this, an understanding of the mind of the aged patient and a general hopeful attitude toward him, will solve many of the perplexing problems of old age.

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114 East Fifty-fourth Street.

Affections of the Epiphyses Peculiar to the Second Decade*

IRVIN BALENSWEIG, B.S., M.D.
New York

The second decade of life is a hazardous period in the life cycle of the child. It is a transition period during which there is an adjustment of the endocrine glands and their sequelæ, such as, fusion of the epiphyses with their respective diaphyses, sexual, mental and physical readjustment. During this period several epiphyses appear for the first time. The children are most active physically and are subject to varying degrees of traumatism. It is the stage of the socalled growing pains of the average physician and parent, be it a painful foot, knee, hip or back. The endocrinologist attributes the pain to a dyscrasia of the internal secretory organs; the internist either states that the child is perfectly well, or when pressed for a diagnosis he is apt to term it a rheumatic manifestation; the orthopedist who thinks in terms of traumatisms and mechanics is inclined to view the affection from his aspect alone. Thus we are confronted by three main ideas as to etiology; endocrine dysfunction, infection and injury. To dwell further on these etiologic factors would detract from the object of this presentation.

The following affections are all peculiar to the adolescent period. They are in the order of their importance:—epiphyseal separation of the hip (epiphyseal coxavara, traumatic coxavara); vertebral epiphysitis (painful adolescent kyphosis); Osgood-Schlatter disease of the tibial tubercle; apophysitis of the os calcis; epiphyseal separation of the lesser femoral trochanter; separation of the epiphysis of the anterior superior spine of the ilium.

Anatomical and röntgenological considerations of the above mentioned epiphyses.

Numerous diagnostic errors are apt to arise from

*Read before the Harlem Medical Association, February 3, 1926. From the hospital of the Ruptured and Crippled.

the lack of knowledge necessary for the recognition of the various epiphyses; their time of appearance, röntgen appearance and relationships to their respective diaphyses and the time of complete ossification.

1. The epiphysis for the head of the femur begins to ossify during the second half of the first

Fig. 1.—Case II. F. S., röntgenogram of the affected hip (July, 1923) showing widening of the epiphyseal line, softening of the juxtaepiphyseal region; area of cavitation and a barely perceptible displacement of the epiphysis.

year of life. The epiphyseal line persists until the fifteenth year, beyond this there is complete ossification. (I. Cohen.)

2. The epiphysis for the tibial tubercle arises as a downward projection from the upper tibial epiphysis or from two centres; the second being found to lie opposite the lower pole of the site of the future attachment of the epiphysis. When arising from two centres they fuse with one another in about a year and act as a single epiphysis. These appear as early as ten years and eleven months and during the eleventh year grow quite rapidly in size, and as a single epiphysis projects forward, being separated by a wide space from the shaft of the tibia. Union proceeds from above downwards, and from before backwards. Ossification is found to be complete by the eighteenth year.

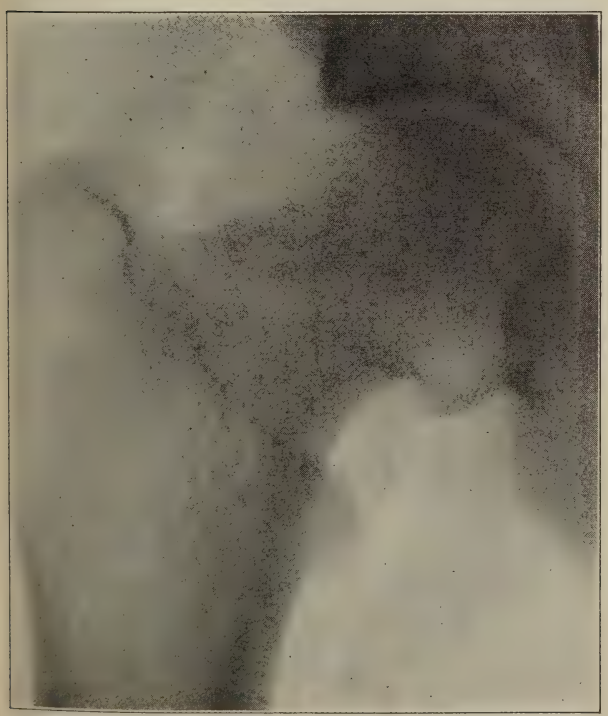

Fig. 2.—Case II. F. S., röntgenograph taken August, 1924, showing premature ossification of the epiphyseal line, complete healing of the process.

3. The superior and inferior epiphyses of the bodies of the dorsal vertebræ appear about the age of eleven and one half years according to Buchman.

Fig. 3.—Case III. A. H., showing the presence of a slipped epiphysis of mild degree.

"Appearing first in the lower dorsal region they later extend up and down the column as small triangular shadows adjacent to the anterior inferior and anterior superior angles of the bodies. Later they become elongated and appear as thickenings placed anteriorly and thin linear shadows extending backwards and terminating at the posterior angles of the bodies of the vertebrae, where they become thickened." Buchman. Fusion takes place about the twenty-fifth year.

4. The epiphysis for the posterior aspect of the os calcis is first observed about the ninth year, and becomes united with the body of the os calcis by the fifteenth year. Complete ossification occurs about the eighteenth year.

5. The lesser femoral trochanter appears as a scale like epiphysis at times as early as the ninth year, and is fused with the shaft by the sixteenth year.

6. The epiphysis for the anterior superior spine

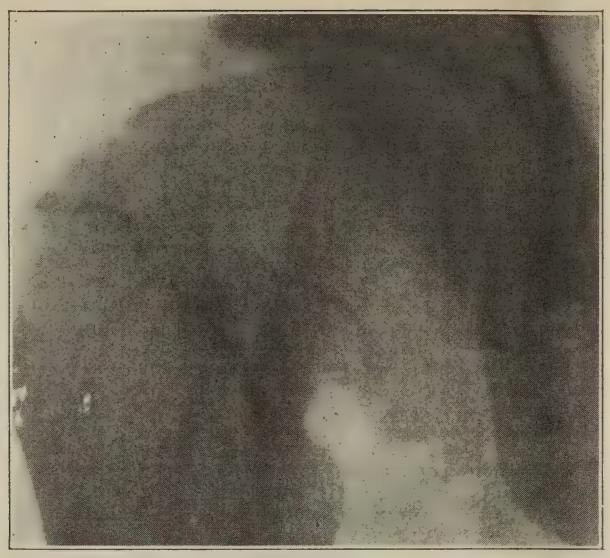

Fig. 4.—Case III. A. H., röntgenogram of affected hip taken three years after admission to the hospital. Large mushroomed head; premature ossification of the epiphyseal line; short and broad neck. Resembles late stage of Perthes' disease.

of the ilium is a part of the epiphysis of the entire crest of the ilium and is first observed about the fifteenth year and fuses with the ilium between the twenty-second and twenty-fifth years.

Epiphyseal separation of the hip. Occurs between the ages of ten and seventeen years more frequent in males and involves the left hip more than the right. The patients present a clinical history that may be considered pathognomonic of the condition. They may or may not be of the socalled status lymphaticus type; are found to be between the ages of ten and seventeen years, and are rarely totally disabled. Questioning elicits the following: that for one to two years prior to examination they have suffered occasional pain and stiffness at the hip or knee accompanied by an intermittent limp, which may or may not have followed a slight injury. The traumatism may have been of a twisting nature, a misstep, a stubbing of the toes or a fall to the ground. The symptoms may continue for months and then be either spontaneously arrested or progress to a stage of disability, the latter most often being due to a mild traumatism. The last injury is usually stressed and stated to be the sole cause for the affliction, especially when there is a possibility of instituting legal proceedings. The patient is observed to walk with a hip limp, with the limb externally rotated and slightly abducted but more often adducted. There is restriction of motion in flexion, abduction and internal rotation, with extension being free in most cases. Here we have a diagnostic sign peculiar to this condition when present, for, in no other intra-articular lesion of the hip do we find freedom in extension. Palpation reveals a fulness in Scarpa's triangle due to the anterior twist of the femoral neck. Mensuration discloses a shortening varying from one fourth to three fourths of an inch. In about fifteen per cent. of the cases there is a bilateral involvement.

Röntgenologic findings—During the early stages, the epiphyseal region is found to be widened, hazy and occasionally fragmented. The immediate diaphyseal portion may be observed to present a moth eaten appearance, or may reveal irregular areas of cavitation simulating röntgen appearances of bone abscesses. The diagnosis is confirmed by observing the following: "Under normal conditions the head rises sharply above the upper border of the neck; in these cases the elevation is lessened and the outline of the head and neck may form an unbroken line." R. Whitman. This may go on to complete separation of the head, the neck appearing shorter and broader due to external rotation of the shaft; and the epiphysis flattened as a result of its backward displacement. In the healed cases the following changes are noted: premature ossification of the epiphyseal line; increased deposition of lime salts obliterating the eroded areas; occasional diminution of the joint space due to absorption of cartilage of the femoral head and in some instances from the acetabulum; irregularity of the femoral head; varying degrees of coxa vara due to faulty reposition of the fragments; occasional flattening and mushrooming of the head simulating late stages of Legg's-Perthes' disease; and changes indicative of osteoarthritis. Nonunion has been observed in one instance.

CASE REPORTS

Case I.—H. G., male, aged fifteen years. Was first observed April, 1924, in the Out Patient Department of the Hospital for the Ruptured and Crippled stating that he was perfectly well until nine months ago, when, without cause, he suffered pain along the anterior surface of the left thigh. No history of either infection or of injury. Patient presented

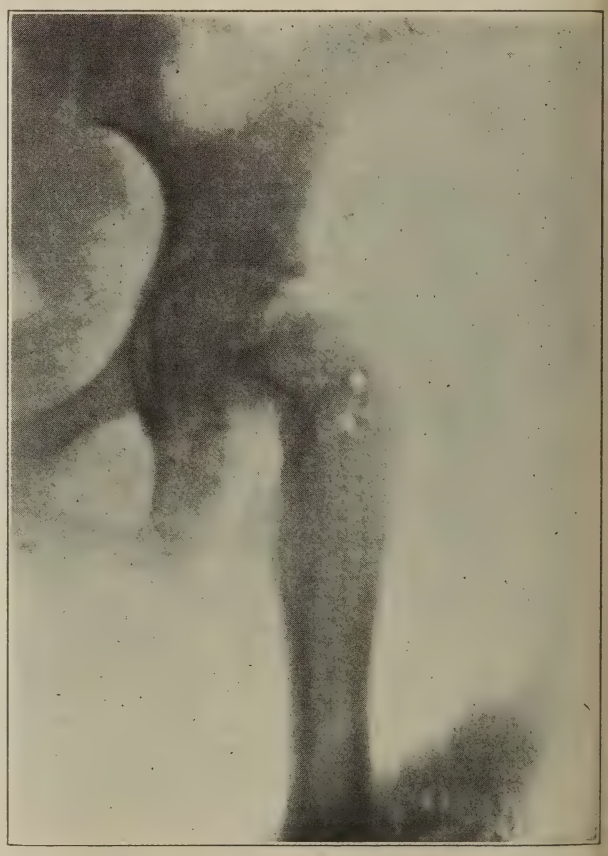

Fig. 5.—Case IV. V. C., röntgenogram taken prior to treatment showing the presence of a moderate degree of epiphyseal displacement. The femoral neck appears short due to the external rotation of the shaft.

himself because of occasional limp and pain of the left hip. Examination: overgrown adolescent male of the socalled status lymphaticus type, walked about unaided and without a perceptible limp. There was no restriction of motion and no atrophy, although there was approximately three sixteenths of an inch of shortening of the left lower extremity. Röntgenogram brought by patient showed a widening of the epiphyseal line on the left side with a loss of lime salts and fragmentation. The head was displaced slightly downward on the neck of the femur. The femoral neck was shorter and broader than that of the opposite side. Treatment suggested—application of a plaster spica bandage and reduction of weight. The patient was lost sight of until November, 1924, when the Social Service Department reported that there had been no change in his condition, and that he had received no treatment to date.

Case II.—F. S., female, aged thirteen years. Was admitted to the clinic July 27, 1923, stating that two months ago she received a slight injury to the left hip in a railroad accident. She had walked about with a limp and slight pain since the time of the accident. Examination revealed an overgrown adolescent girl walking about with a slight left hip limp with the limb in external rotation. There was some restriction of both internal rotation and abduction. No atrophy present. The affected limb measured one eighth inch shorter than the opposite one. No treatment was instituted, and when last seen, August, 1924, there was no restriction of motion of the hip, no atrophy, and, as previously noted, one eighth inch shortening. The x ray, at the time of admission, disclosed a normal right hip region, the left one presented a flattened appearance of the femoral head, a slight downward displacement of the epiphysis, widening of the epiphyseal line with loss of lime salts for a distance of one half inch of the diaphyseal region, and an appearance of cavitation of the inferior pole of the proximal end of the femoral neck. Röntgenogram taken August, 1924, shows a premature ossification of the epiphyseal line, disappearance of the cavitation and a normal joint space. This instance presents the characteristic röntgen findings of a low grade infection.

Case III.—A. H., male, aged thirteen. Admitted to the Clinic of the Hospital for the Ruptured and Crippled November 22, 1921, complaining of pain in the left hip of five months' duration, gradual in onset and without a history of either injury or infection. The condition was originally diagnosed elsewhere as an instance of Perthe's disease and a short spica bandage applied for six weeks with some relief. Physical examination at the time of admission revealed findings indicative of epiphyseal separation of the left hip region in one who was not of the infantile type. The hip was stretched under an anesthetic and a long plaster spica bandage applied. Patient reported from time to time to the clinic, and on August, 1924, he was observed to walk with a slight but perceptible limp, with same restriction of both abduction and internal rotation. Measurements disclosed a three quarters inch shortening of the affected extremity, one inch atrophy of the thigh, and one quarter inch atrophy of the calf. X ray findings—Film of June 22, 1921, showed a widening of the epiphyseal region, loss of lime salts on the diaphyseal side, some upward displacement of the neck of the femur. Röntgenogram of September, 1921, revealed the above slightly exaggerated; that of November, 1921, showed a complete solution of continuity at the epiphyseal region with a forward rotation of the femoral neck. This was completely corrected as disclosed by the picture taken at a later date. X ray of August, 1924, showed changes observed in cured cases of Perthe's disease, that is, large mushroomed head, short and broad neck.

Case IV.—V. C., female, aged thirteen years, school girl, was admitted to the hospital June, 1923, complaining of pain and partial disability of the right

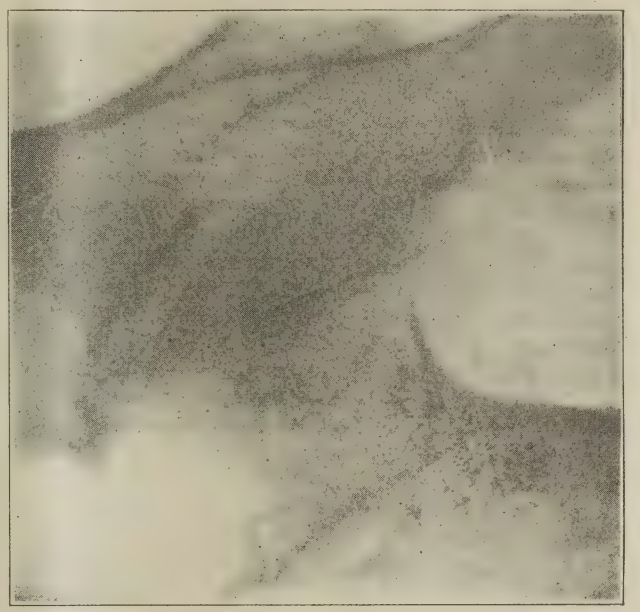

Fig. 6.—Case V. A. Z., röntgenogram of the affected hip taken sixteen years after operation for epiphyseal separation. Röntgenologically similar to late stage of Perthes' disease.

lower extremity. Duration nine weeks. At the time of onset, she was struck across the knees from behind, causing her to fall to the ground. She was assisted home and placed in bed, where she remained for three weeks. Soon after admission to the hospital, the affected hip was manipulated under an anaesthetic and a long plaster spica bandage was applied.

At the end of ten weeks the plaster was changed, maintaining the hip in an attitude for walking. Patient discharged at the end of five months walking with the aid of crutches. Since discharge she had been continuing treatment in the physical therapy department.

Examination August, 1924, and in October, 1925, showed that the patient was able to walk about without assistance, but with a right hip limp. Complained of no pain. The hip was fixed in a good walking attitude. The affected extremity was one inch shorter, the thigh presented an atrophy of two inches, and the calf of one inch.

The röntgenograms of June, 1923; the left hip was normal. The right hip region; outward rotation and upward displacement of the shaft of the femur; erosion of the proximal third of the neck; marked separation of the epiphysis.

(*To be continued*)

Practical Therapeutics

Psychological Factors in the Treatment of Disease, with Especial Application to the Treatment of Paralyses in Childhood*

HENRY KELLER, M.D.

New York

PSYCHOLOGY AS APPLIED IN THE TREATMENT OF DISEASE

Some time ago in speaking of the general practitioner, I brought out the fact that in order to be successful in the treatment of disease one must use every means at his disposal, be it physical, mental, persuasion, suggestion or the method of autosuggestion, in order to establish a confidential communion with the sufferer. In no other way can a healer call himself a real physician. He may be a splendid theorist, stocked full of wisdom gathered from the autopsy table and pathological museum. He may also be a wizard in the handling of all modern apparatus, as well as take active part in the discussions taking place at various medical gatherings. However, notwithstanding all this, that physician is a complete failure at the bedside. He is all, but a physician, in the true sense of the term.

The dictum of Socrates uttered so many years ago, in the name of the Zamelxis' physician, still holds good today, as of yore. "All good and evil, whether in the body or in human nature, originate in the soul, and overflows from thence, as from the head into the eye. Therefore, if the head and the body are to be well you must begin by curing the soul, that is the first thing. And the cure has to be effected by the use of certain charms, and these charms are fair words, and by them temperance is implanted in the soul, and where temperance is there health is speedily imparted, to the whole body."

And he who taught me the cure and the charm, Socrates (1) continues, added a special direction: "Let no one," he said, "persuade you to cure the head until he has first given you his soul to be cured by the charm. For this," he said, "is the great error of our day in the treatment of the human body, that physicians separate the soul from the body."

FIG. 1.—Testing distance and color perception with yardstick and toyholder.

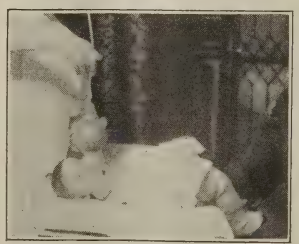

FIG. 2.—Simple method of getting child's cooperation.

Time and again have I emphasized the fact that the great danger of overspecialization in medicine is the fact that we treat a case, an interesting disease, a pathological phenomenon, but forget that the patient is a human being—with susceptibilities, eccentricities, idiosyncrasies, and emotions, each characteristic of which may modify the symptom complex to such an extent as to mislead the unwary. The treatment of disease after the diagnosis is established must also vary in accordance with the antecedents and environments of the sufferer.

Social status, sex and mentality, must all be taken into account. Drugs administered to the alien coming from Central Europe must, in order to be effective, contain ingredients which taste bitter, salty or sour. An ointment should by preference have a dark base, an odor and pungent. In children, on the other hand, medicines should always be sweet, sugary and tasty.

The ordinary patient expects a prescription following a painstaking examination, otherwise he feels that the physician has done nothing for him—with the result that he will probably land in the office of one's next door neighbor. The psychic effect of a prescription is great and should be utilized by the intelligent practitioner.

Some years ago a patient came to see me and after a thorough examination I decided that she was in need of plenty of water to wash through her kidneys. When I apprised her of that fact she told me that she can not tolerate any water, and that it tastes like poison to her. I soon switched my conversation to other topics in order to get her mind off the subject. A few minutes later I prescribed for her ℞ Syr. Rubi Idei ℥iv with directions that she take no more than five drops of the medicine in half a tumbler of water every three hours. Repeating, however, a number of times, with emphasis, that the medicine was very poisonous and that she should by no means take more than five drops to each dose. I then conducted the patient to the door, and in parting I again reminded her of the poisonous nature of the medicine, and also informed her that she should not return until the entire contents of the bottle was consumed. Four weeks later she returned, informing me of the fact that never before has she been given such wonderful medicine, and that she was all improved.

Little things may sometimes have great effect upon

*Lecture delivered at the University and Bellevue Hospital Medical College February 5, 1926, under auspices of the Neurologic and Orthopedic Departments.

the patient who is in your care and may at times effect a speedy improvement. In 1915, while a patient with spinal tuberculosis with paraplegia as a complication, was being prepared for an Albee operation I explained to the visitors in the amphitheatre the mode of procedure, the indications and counterindications. The patient was fifty-eight years old, not a very favorable subject for operation and before the anesthetist put the mask on the patient's face I heard the latter utter a prayer that, the Almighty may guide me and help me—spoken in a foreign tongue which I understood. When he finished his prayers I turned to the patient and replied Amen. He thereupon called upon the anesthetist to go on with the anesthesia as he, the patient, was ready.

After I was through with my work and he came out of the anesthesia he told me that my response to his prayer gave him assurance that I can do him no harm and that he feels that he is going to recover—and he did.

Injuries as well as deformities in children, as well as in adults, must be studied from a psychological point of view before determining the mode of treatment to be instituted, as I pointed out a number of times in my various publications.

Not all patients can be put on the inactive list even in fractures, and it is our duty to assort them properly and treat them accordingly. To quote a statement made by the writer on a previous occasion and published, with reference to fractures. "I am always concerned about the patient's return to his normal occupation at the earliest possible moment. For example, a patient having sustained a Pott's fracture is given an anesthetic and the fracture is properly reduced, immobilized by plaster of Paris bandages, and then an x ray is taken. If the alignment is good the patient, if he is a professional, business or office man, is permitted to return to his occupation after one week, walking with the aid of crutches, and a shoe raised three inches of cork sole on the normal foot, so as to keep off any jarring on the injured limb. An automobile pressed into service will be able to take the patient to and fro. The effect of such treatment upon the patient's mentality is remarkable. On the other hand, the same fracture sustained by a weak, overworked and exhausted housewife should be treated like the fracture sustained by the soldier upon the battlefield. She should be removed from her home to a hospital, for she is in need of mental as well as physical rest, both of which she cannot obtain at home surrounded by her old associations. If nothing else can keep her in the hospital, a Balkan frame is certainly impressive and should be resorted to" (2).

To those who are particularly interested in the study of psychology of the cripple and handicapped I beg to refer to the article of mine which goes into the subject exhaustively, showing there the influence of sex upon such deformities, and how to utilize that knowledge in the treatment—with the following conclusions: "To put the matter in concrete form it is necessary for the orthopedic surgeon to view his patients suffering from deformities from the psychological viewpoint, as well as from the point of view of physiology and mechanics, and acquaint himself with the subconscious motives activating those sufferers to seek relief, for only in that way can he deal with his patient thoroughly, scientifically, and successfully" (3).

W. Blanchard (4) in speaking of operative correction of bowlegs, points out that a primary consideration in the end results of any operation is the effect on the mental condition of the patient. He also calls the reader's attention to the dejected look of each patient with bowlegs before operation, and the self-confident poise of each cured case.

Only recently have I been invited to a wedding of a girl whose torticellis I have corrected by operation five years ago, and whom I have not seen since the removal of the plaster helmet eight weeks after the operation. Her improved demeanor and her change of poise since she first came to my office seeking relief was something that I shall never forget. She told me that the reason why she came to invite me to the wedding is the fact that she was convinced that, if not for the corrected deformity she never would have attained the anticipated bliss.

PSYCHOLOGY OF CHILDHOOD AND ITS APPLICATION TO THE TREATMENT OF PARALYSES

There are cases of paralyses quite frequent in childhood which may be due to damage either to the peripheral nerves as in obstetrical paralysis, or caused by spinal cord involvement as in anterior poliomyelitis. In these involvements the damage may be very extensive with extensive paralysis of the part supplied by the nerves implicated. On the other hand, there are many cases where the damage wrought by the onset of the disease has a tendency to subside, leaving only few muscles of the group originally involved to bear the brunt of the disease, while the other muscles recover their old time vigor, or some muscles of the group may be paralyzed while the others may be left weakened or paretic.

The latter cases are most amenable to commonsense treatment, and one can expect a great deal of improvement in such cases, provided the cooperation of the child can be obtained quite early in life, before permanent damage has set in the spinal motor centres caused by disuse of the parts. The most effective method to secure the active cooperation of the child is by the psychological methods hereafter set forth.

That early childhood is the most frequent age in which anterior poliomyelitis manifests itself is shown by the following statistics: Whitman, in giving his statistics of the age incidence in infantile paralyses shows that seventy-one per cent. occur in the first three years of age. The records of the Department of Health covering a series of 1,081 cases of poliomyelitis during the epidemic of 1916 studied with reference to the age incidence, show that the age incidence having the largest number of cases was two years.

Erb's palsy or obstetrical paralysis involves the upper extremity in the largest majority of cases. Though many cases are caused by compression, in the majority of cases the actual lesion is laceration due to over stretching of the nerves and their sheaths.

Tubby points out the important fact that it is only very rarely that total paralysis has been reported.

Tubby (5) cites statistics showing that Erb's palsy occurs once in two thousand births, alike in both sexes.

In order that one may treat a child intelligently one must realize that a child is not an adult in miniature,

as a good many seem to think, but that the mind of the child is an entity by itself, with its own laws. Only then can one succeed in entering into confidential communion with the child, whether it be well or sick. Movement, which though in later life passes out from the direct guidance of the mind, and becomes an automatic part of the central nervous system, is in early childhood dependent upon the brain integrity and mind, in order to develop normally.

Angell (6), in his interesting book dealing with modern psychology, brings out these facts very succinctly, thus: "The earliest objects of our volition are undoubtedly the satisfaction of the simple bodily needs represented by hunger and protection from the extremes of temperature. Then comes interest in securing control over objects at a distance from us by virtue of learning to move our eyes, our hands, and our bodies in such ways as will enable us to secure or to avoid particular forms of stimulation. In this manner it occurs that during the very early years of life we gain command over our more commonly used muscles. We learn to walk, and to talk, to write and to read, to reach for objects, to lift them, and to place them where we may desire. All these muscular accomplishments rest upon what we designate habit. These habits at the outset require the most persistent and careful mental control. After the movements have been performed a few times they tend to become more or less automatic, and after a sufficient number of repetitions they may pass almost wholly out from under the direct guidance of the mind, and be carried on by the automatic machinery of the nervous system, thus leaving the mind free to pursue its own further interests."

KINESTHETIC EQUIVALENT

Movement of the trunk as well as performance of an action is usually accompanied by some thought, or mental picture, or image or memory to suggest that movement, or action, which is equivalent to the feeling of the movement we desire to make. Otherwise we can not succeed in making it. This principle is termed in psychology kinesthetic equivalent. Baldwin (7) illustrates the principle in the following way: "This dependence of action upon the thought which the mind has at the time is conclusively shown in certain patients having partial paralysis. These patients find that when the eyes are bandaged they can not move their limbs, and it is simply because they can not realize without seeing the limb how it would feel to move it, but when they open their eyes and see the limb they can move the limb or limbs freely."

A patient can not speak when the cortex of the brain is injured in the particular spot which is used in remembering how the words feel or sound when articulated.

Many such cases lead to the general proposition that for each of our intentional actions we must have some way of thinking about the action, of remembering how it feels, looks, etc. We must have something in mind equivalent to the experience of the movement.

A child, therefore, can not perform a new movement simply by wishing it as he has no equivalent in his mind to proceed upon. But as he learns the action, gradually striking the proper movement one by one, oftenest by imitation, he stores the necessary equivalent up in his memory, and afterward only needs to think how words sound, to be able to make the movements or speak the words forthwith (8).

APPLICATION

One can therefore realize, without the need of a great stretch of the imagination, that the smaller the child when afflicted the greater the danger of the deformity becoming more persistent and therefore the need of early treatment in order to reestablish the association of the movement with the memory of the movement in the brain, or to establish the memory equivalent, as early and soon after the diagnosis is established.

Another important point which this above statement of Baldwin suggests is the fact that, in inducing the child to use the affected limb it is necessary to first stimulate the child's alertness by allowing it to use the unaffected limb, and then gradually encourage the use of the weak limb, and also that the child should be placed in such attitude as to see the attempt of the motion of the limb, for as we brought out before that the vision will help establish the movement equivalent in the mind—and thus aid in the recovery of the affected limb.

MODES OF APPEAL TO CHILDHOOD

Play is a tendency which is innate in the human in common with many of the animals, and it is therefore a very important means of finding favor with the child, and obtaining the child's cooperation with very slight effort.

"Play," says McDougal (9), "must be reckoned among the native tendencies of the mind of high social value. Children and the young of many species of animals take to play spontaneously without any teaching or example."

There are various theories to account for same. According to Professor Groos (10) the plays of animals and children are instincts which have arisen through the action of natural selection because, of their usefulness as a practice and preparation for life's later serious duties.

Others look upon the play tendency as a special instance of the operation of the law of recapitulation, in which the child retraverses in his play the successive culture periods of human history. While still others—led by Schiller and Spencer, play is the expression of a surplus of nervous energy. Some consider play as identified with the spontaneous expressions of the unspoiled and inexperienced mind.

Whatever the reason for this inborn tendency for play may be the fact remains that such inclination is found in marked degree, and that an intelligent physician can utilize this characteristic of childhood in the treatment of many deformities, and bring about improvements in certain defective organs without the patient's direct knowledge of the reason for such cooperation.

Games must be ordered according to the age and sex of the child, as pointed out by me (2) in a previous paper that, even in earlier childhood the difference between the masculine and feminine type manifests itself in the love for different games. The girl loves her domestic plays, her dolls, her make believe school, and a number of other such tame games.

(To be concluded)

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Factors Facilitating Epileptic Seizures*

ALFRED GORDON, M.D.

Philadelphia

Among many problems concerning the pathogenesis and etiology of epilepsy, one especially appeals strongly by virtue of its practical value and that is the recognition of factors which condition epileptic seizures. During a period of ten years I endeavored to register attacks of epileptic convulsions in their relation to accidental or incidental situations which immediately preceded them. Records were kept of a series of two hundred cases in hospital and private work.

In forty cases convulsive attacks would make their appearance whenever there would be an omission or neglect in the care of the gastrointestinal apparatus, such as constipation or else diarrhea, formation of considerable amount of gas. In ten consumption of certain articles of food, particularly nitrogenous, such as meats and eggs, and in some cases fish food—have all been the provocative factors. There was a great variation in the individual susceptibility, as, for example, in some cases one of the food articles mentioned remained without effect but in other cases it played the rôle of a provocative agent soon after the ingestion (from one to three hours). In this group no evidence of a pathological state of the entire alimentary tract could be discovered. In twenty cases a chronic gastrointestinal disorder was present: Dilatation of the stomach, enteritis, hypochlorhydria or else hyperchlorhydria—all evidenced by röntgenographic and chemical studies. In these cases faulty combination of food leading to fermentation, putrefaction and local distress accompanied or not by pain—have all been observed in association with and preceding the onset of convulsive seizures. In several cases (ten) intestinal parasites were present and their expulsion was followed by considerable improvement, although there was no total disappearance of the attacks. On the other hand reformation of the parasites led to a greater frequency of the seizures.

These four groups of cases evidently belong to the toxic category. The metabolic vicissitude, the chemical substances, gaseous or liquid, elaborated during the process of gastrointestinal digestion are here apparently responsible for the cerebral upset or irritation which invariably resulted in convulsive seizures. The relation of toxicity to epileptic attacks is of course debatable. However, when the alimentary toxic element is manifest, the epileptic attacks may be considered as an anaphylactic crisis in which abnormal proteins enter the organism.

To the toxic groups belong also cases in which alcohol played a considerable rôle (fourteen in number). The use of wine, beer or brandy in these patients, even in small amounts, always resulted in convulsive seizures.

Eight patients presented a very interesting situation. In them the epileptic seizures occurred only at the end of the day upon the return from work when they felt exceedingly fatigued. Two of these patients observed that when on holidays they had opportunities to take prolonged promenades, the latter invariably were followed by attacks. In this group evidently undue physical fatigue was the provoking factor. What the exact mechanism is in fatigue which leads to cerebral irritation and consequently to epileptiform seizures is difficult as yet to determine unless we admit that exhaustion is accompanied by formation of noxious metabolic substances or by chemical disturbances in the internal secretory function of the endocrinological system which via the circulatory system reach the cortex. Twelve patients were in the adolescent period of life. They all suffered from epileptic convulsions at irregular periods. Being extremely poor, they were underfed; pallor of the skin and of the mucous membranes, great hunger, restlessness, irritability, insomnia were the symptoms present. The blood examination showed some evidences of anemia, such as diminution of hemoglobin (from 75-85) although there was no pronounced anemia. An unusual improvement in frequency and intensity of the attacks followed the amelioration of the physical condition brought about by the social charitable agencies in Philadelphia. How malnutrition may become the provocative agent of epileptic attacks, one cannot definitely say, although cerebral anemia has long been known as one of the etiological factors in epilepsy. It is well known from experimental physiology that compression of the carotids may produce loss of consciousness. In one of my patients (not

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considered in this group) during convalescence from a protracted case of double pneumonia there developed a convulsive seizure when he got out of bed and assumed an erect posture.

In twelve cases there was an insufficient number of hours of sleep. Whenever the individuals happened to have a poor or a very poor night averaging one or two hours of sleep, early on the next morning there would be convulsive seizure. So striking was this phenomenon that the patients surrounded themselves with precautions and when there was no tendency to fall asleep, one or two tablets of allonal or of veronal would be taken, and thus they averted the morning epileptic seizure. It is possible that in all such cases a congested state of the brain maintained through a sleepless night by a continuous cerebral activity is the cause of the cerebral irritation resulting in seizures.

Ten females presented an interesting and unusual coincidence of epileptic attacks with the change of the weather. Immediately preceding a storm and rainfall an attack would invariably occur. The phenomenon was so constant that the patients familiar with such possibilities would go to bed and keep some one of their relatives in the room to watch them in order to prevent injuries during the seizures. It is difficult here to explain satisfactorily the influence of variation in atmospheric pressure except perhaps by analogy with what takes place in the spinal cord in cases of caisson disease. According to one of the views concerning this affection there is congestion followed by stasis: high pressure drives the blood from the periphery to the internal organs especally to the nervous system. In our cases similar temporary changes probably occurred in the vascular supply of the cortex with the result of an irritation producing a convulsion.

In seventeen cases (all men) the following phenomenon was observed: on many occasions following a great physical effort the face would become purple and a convulsive seizure would occur: as, for example, in lifting heavy weights or in trying to reach objects at a certain height, or in leaning downward with the head low. In these cases we are probably dealing with a passive congestion of the brain resulting in a cortical irritation and consequently in convulsions.

Seventeen patients had convulsive seizures during induced variations in the pressure of the cerebrospinal fluid. In seven of them for therapeutic purposes or in the course of routine lumbar punctures for biological tests each withdrawal of small amounts of spinal fluid (five or ten c. c.) would be followed by an epileptic attack. Lériche, as it is well known, believes that the intracranial pressure in epilepsy is low. In order to raise the pressure I injected repeatedly in the spinal canal, five, ten, and twenty c. c. of physiological salt solution. Curiously enough and contrary to the experience in the former seven cases, an epileptic convulsion occurred after each injection. The conclusion that could be drawn from such contradictory findings is that hypotension as well as hypertension could be equally incriminated. Either factor produces a cerebral irritation which results in epileptic seizures.

In thirty cases various traumatisms played a significant rôle. I hasten to add that only the socalled idiopathic epilepsy is considered here but not the affection due to a proven damage of the brain tissue. In some of this group prior to the trauma epileptic attacks occurred on rare occasions, once in six months or in two or seven years. Following an insignificant trauma, such as a fall from three steps of stairs, an accidental fall on the pavement, a sprain of an ankle, a twist of the lumbosacral region, a fracture of the wrist in three cases—in all these instances there was a precipitation of the original convulsive attacks. It was strikingly evident that the trauma was the provoking factor, and the subsequent seizures were the result either of sudden alterations in the intracranial pressure, or of circulatory disturbances or else of sudden endocrinic discharges.

A survey of all the data presented here suggests the idea that they contain no specific value as far as the pathogenesis of the great affection called epilepsy is concerned. There are many other factors besides those observed in my two hundred cases. They are all of the same etiological importance. They are but circumstances favoring the outbreak of an epileptic seizure.

If we consider for a moment the fact that the very same occurrences, such as trauma, metabolic vicissitudes, hypotension or hypertension of the cerebrospinal fluid, etc., are not followed by serious morbid consequences in normal individuals, the above mentioned conclusion as to the absence of a specific value in these provocative factors finds its strong corroboration. The fact that in some cases they do and in others they do not condition epileptic attacks, demonstrates strikingly the truth that there are brains which possess so to speak a certain epileptic predilection (*epileptische Reactionsfähigkeit*) or rather a certain tendency of the cortical cells to molecular or functional disturbances, which under the influence of the above provocative factors become awakened. This apparently speculative contention finds its special confirmation in the history of traumatic epilepsy. In many instances of trauma even gross damage may never be followed by convulsive seizures, but in the epileptic cases while the trauma may produce small or diffuse structural or molecular or vascular changes in the cerebrum, the latter *per se* are not sufficient for the creation of an epileptic condition. Such a situation suggests the existence of a central nervous system which is fundamentally or inherently predisposed to irritative phenomena by virtue of special personal or family morbid characteristics. We are dealing in all such instances with a socalled "intrinsic epileptic predilection." What this intimate "predilection" means in terms of exact science or what precisely the molecular alterations in the cortical cells consist of,—all this escapes our observation as yet in spite of the fact that Ahrens (1) observed positive changes by means of Abderhalden's reaction. Although we are still working in uncertainties with regard to the pathogenesis of epilepsy, nevertheless the accumulated clinical, physiological and experimental data permit us with sufficient reason to admit that in this affection the function of cortical elements is unquestionably disturbed and that in forming a proper estimate of such disorders we must invariably bear in mind the personal and family antecedents and particularly the biochemical processes, the physiological, endocrinological, hereditary and psychic elements,

characteristic of each individual. That they are most important in the determination of the pathogenesis of epilepsy, can be seen from various therapeutic attempts and endeavors. Held (2) for example administered a serum extracted from dogs previously inoculated with the serum from epileptic individuals. His object was to neutralize the toxins of the epileptic or to influence favorably the endocrines. In four hundred such cases he obtained seventy per cent. favorable results. I, believing that the bloodserum is not the only fluid but the cerebrospinal fluid also participates in their distribution, utilized the latter for the treatment of essential epilepsy. I observed hemolysis when blood cells of one epileptic were placed in contact with the cerebrospinal fluid from another epileptic thus illustrating the fact that each cerebrospinal fluid contains substances which act specifically on another epileptic. Some (3) favorable and even extremely favorable results were obtained by me with regard to the character, intensity and recurrences, general health and mentality of some epileptics. Another observer, Lériche (4) obtained satisfactory results with intravenous injections of physiological serum.

A critical review of all such therapeutic attempts prove that they are all sound because they are based on well established scientific data; they also prove that there are undoubtedly many factors in the causation of epilepsy. Failure in a given case means that the particular etiological factor in that case escaped the investigator's notice. Success in a given case means that its etiological factor was traced and caught by me and therefore the method used was the appropriate one. The subject of essential epilepsy is therefore extremely vast; unceasing biological research in every direction is inevitably indispensable for the determination of the chief endogenous factor in each individual case of essential epilepsy.

From the mass of accumulated data which is actually bewildering one may conservatively draw this conclusion that the true pathogenesis lies in a special susceptibility of the cortical cells to irritation and this susceptibility is in all probability inherent either in a morphological or biochemical sense. Multiple factors are at the basis of the constitutional characteristics, and among them hereditary and congenital ones play the most conspicuous role. Excepting the cases with direct traumatic damage of the cortex, in all instances there exists the *epileptische Reactionsfähigkeit* of the brain mentioned above. Although the mathematically exact determination of the latter had so far escaped our efforts, we must nevertheless continue our work in the same direction bearing in mind at least this indisputable evidence that the existence of inherent constitutional elements indicate the direct road to preventable means and measures. Splendid examples of such a scientific attitude we find in the histories of pathological germplasms leading to endless varieties of abnormal states, and conditions in the progeniture, among which special and pathological tendencies of the cerebrum may be mentioned in connection with the subject under discussion. At this juncture the present study acquires a position of an intense prophylactic character rather than that of a curative character. On the other hand in view of the obscurity of the actual pathogenesis which confers a certain mystery on the above mentioned morbid predilection of the brain which produces epilepsy, the knowledge of the existence of some endogenous or exogenous factors which are apt to precipitate or provoke an epileptic seizure is of great value. Since we are helpless and impotent when we are confronted with the end results of pathological germplasms, our efforts must be directed besides prophylactic activities, chiefly towards removal or at least towards decreasing the intensity of those precipitating factors such as described in the present study. While the basal inherent creators of the disease are not amenable to alteration in the victims of the mysterious malady, the provocative factors are on the contrary to a great and even to a very great extent amenable to a minimization of their pernicious influence on the special dynamism of a brain which is fundamentally ready to be disturbed in a pathological manner.

THERAPY

The knowledge of those unfavorable circumstances is of great therapeutic value. Each of them *per se* may be sufficient to produce the disorder, but some of them may be at work conjointly. The largest majority of them and many others which are not included in the present study but which also belong to the group of facilitating factors of epileptic seizures, may be greatly decreased, combatted, or even suppressed by means of appropriate physiochemical measures. Gross therapeutics consisting exclusively of administration of drugs will not give desirable results and if continued the epileptic patient will remain their slave all his life. In every case of epilepsy one must always bear in mind first the special inherent epileptic predilection and second the easy convulsive reaction to all disturbing factors such as are being considered in the present report. The suppression of the facilitating factors is particularly efficacious in the early phases of the disease. Consequently early intervention is of paramount importance and upon the character of the latter the patient's future depends.

In all cases of essential epilepsy one must endeavor to trace all possible circumstances, that are apt to facilitate epileptic outbreaks on the order of those enumerated in the two hundred cases of the present series; one must analyze them from every standpoint, physiological, biological, chemical and physical, always bearing in mind that we are dealing with brains which possess a special reactivity of their cortex. The latter is observed even in the traumatic cases with cerebral lesions. In a previous study (5) attention was called to the striking fact that with identical cranial injuries resulting in identical cerebral lesions a trauma may in a certain group of cases be accompanied or followed by epileptic seizures, and in another group be totally free from such manifestations. In the traumatic cases therefore we are bound to admit that a lesion of the brain becomes epileptogenous only when there are also other factors at work, and that the role of these factors is to produce a cerebral irritation on the basis of physical or biochemical influence. In the present state of our knowledge while waiting for a true pathogenesis of epilepsy, therapeutic resources become per force limited to tracing and combatting conditions and circumstances, facilitating outbreaks of convulsive seizures, such as presented in this study.

TABLE	No. Cases
a. Dyspeptic manifestations in a normal gastro-intestinal tract	40
b. Consumption of nitrogenous food	10
c. Chronic gastrointestinal affections (gastritis, dilatation of stomach)	20
d. Intestinal parasites	10
e. Alcohol	14
f. Fatigue	8
g. Malnutrition	12
h. Insomnia	12
i. Atmospheric changes	10
j. Physical effort	17
k. Variation in tension of cerebrospinal fluid	17
l. Traumata	30

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The Use of Sedatives, Tonics, Endocrines, Etc., in the Reëducational Training Treatment of the Epileptic

L. PIERCE CLARK, M.D.
New York

We shall take up for consideration the favorable influence of sedatives which may be combined with the phases of reëducational training treatment, psychic and physical, that have been laid down for the epileptic. In many instances if one fails to reach and remove the cause of the disease, sedatives judiciously administered may find a fitting use, either temporarily or for periods of years.

For the subject who gains a sense of relief after one of his long interval periodic convulsions, no effort should be made to unduly check their occurrence beyond a point of safety. In fact large doses of sedatives in such subjects are contraindicated. Even in epileptics who have many attacks it is often best not to attempt to abolish them altogether. A relative cure in epilepsy is frequently an honorable aim. So long as the patient is none the worse for a seizure now and then, or when an actual attack is a decided asset, he may be allowed to have one without using methods for suppression. A chronic inhibition of attacks often gives rise to a cumulative outcome, and the character of the case may be changed from a relatively benign to a severe or malignant type.

With the advent of more rational systems of medicine within the past fifty years some decided improvements in the use of drugs in epilepsy have been attained. It seems to have become generally conceded that the general specific therapy of the disorder rests upon the selection of a sedative principle of medication.

This, however, may be seriously combatted by the actual clinical evidence brought forward. Looked at in a narrow sense, the seizure epoch is an explosive discharge; but when we recognize that the fit itself is but the terminal process of a long sequence of antecedent causes, it is impractical in the extreme to repress the latter. Even if we base a sedative therapy upon the theory that the disease is dependent upon the rate of metabolism or oxygen consumption in the nerve cells, and that its effectiveness is really a chemic one acting upon a cortical defect in chemic dynamics, the situation is by no means much improved, for we have not a single shred of evidence as to the normal physiology underlying mentation. The final representation is that as a residual of the attacks (symptomatic pathology) there is a variant lesion of the cortex, the loss of whose elements to any destructive degree is unrenewable; hence we may not look for any system of natural restoration of parts such as may be the case in many other structures of the body, but there is simply an overgrowth of neuroglial elements, a scar replacement at best. Viewing the disorder in such a fatalistic light, the wonder is that any epileptics are cured or that seizures are brought to an arrest; yet grave exhibitions of the disease are often spontaneously terminated. In some instances the disease is outgrown in children and youths, and occasionally cases respond promptly to the specific therapy of sedatives.

In no disease, perhaps, is the removal of the seeming cause attended by so little permanent results. This fact alone shows that dependence cannot be placed upon such alleged causes. Rarely some source of reflex irritation may be recognized and removed with more or less benefit. Such advantages are largely attained in the earlier stages of the seizure epoch.

In the proper management of the use of drugs in epilepsy, one is to avoid everything that smacks of routine treatment. No doubt many of the failures in using drugs as directed against the seizure-frequency is due, first, to the fact that a rigorous plan is often not undertaken until the seizure epoch has become firmly established, and, secondly, that the individual patient is given too little accessory attention due to the seizure phenomenon engrossing the whole picture. The mere administration of a much recommended drug without studying the epileptic upon whom it is to be used will do little good and may work detrimentally in so many ways that it may destroy both the patient's and the relatives' confidence in any and all drug administration.

All sedatives, while perhaps having their maximum effect upon the neuromuscular and cortical apparatus *per se,* have a depressing effect upon the cerebral blood pressure; the heart action is also depressed as well as the whole vasomotor tonus. These drawbacks to sedation can be overcome in part by administering coincidentally vascular tonics and stimulants. Lastly —but ranking first in importance—is the host of gastrointestinal ills in many epileptics by nature and made much worse by sedatives.

Drugs are administered for the purpose of influencing the attacks, either by arresting their occurrence, or, failing in this, by rendering them less frequent and severe. We are still ignorant of any means of suddenly curing the essential disease, and from what we now know of its etiology and pathology it seems unlikely that any means of rapid or sudden cure will be forthcoming. Some types of convulsions which are less fundamental than genuine epileptic attacks are capable of early eradication in some instances.

Almost every drug in the pharmacopœia has done duty as a cure for the disease some time or other. The question is no longer between bromides and some other drug, but between drugs and drugless treatment. The influence of drugs is transient, which makes it necessary to make a repeated renewal. Since their introduction by Laycock seventy-five years ago the salts of bromine have enjoyed steady favor as antiepileptic remedies, notwithstanding the fact that they fall far short of meeting the important indications. The action on the human economy of all the bromide salts is essentially the same. Bromide of potassium—which is the universal remedy—acts as a distinct motor depressant, and coincidentally lessens the activity of the intellectual centres. Pushed to an extreme degree it produces apathy, listlessness, lack of interest, a dull, apathetic expression, and, if carried still further, produces a mental condition not unlike that of primary dementia or stuporous melancholia—a condition from which the patient usually makes good recovery when the drug is withdrawn. If pushed too far, death may supervene from acute bromide poisoning. Bromide also exerts a sedative action on the spinal cord, and thus lessens reflex excitability. On the circulation it causes, at first, a fall in arterial pressure. If given in toxic doses, it arrests the heart in diastole, while its long continued use results in a weakened and irritable condition of that organ and a general impairment of the circulation. In ordinary doses, it produces but little effect on the respiration; but in larger doses it acts as a depressant. It often impairs digestion, as it irritates the mucous membrane of the alimentary canal and interferes with the reflex activity of the stomach in a way to check the normal secretion of gastric juice. It causes constipation, a heavy coating of the tongue, and foul breath. It leaves a bad taste and a pasty feeling in the mouth, and causes loss of appetite and not infrequently nausea and diarrhea. It lessens metabolic changes through depressing the nervous system. It produces an unsteady gait, myasthenia, particularly noticeable in the legs; depression, and often loss of sexual vigor; forgetfulness and slight degree of aphasia, usually shown in the misuse of words and wrong formation of sentences. On the temperature, in ordinary doses, it lowers the heat of the body by depressing the heart action and possibly by contracting the arteries, a fact apparently established through the experiments of Brown-Sequard, Mairet, and Armory. The effect of bromide on the skin in causing acne is universally known. It is eliminated from the system very slowly and escapes unchanged.

In spite of their enormous drawbacks the general utility of the bromides—especially those of the sodium, ammonium and potassium compounds—may be attested to by the fact that they have held sway for over half a century. They are the chief ingredients of nearly all patent medicine mixtures. The average dose is from twenty to thirty grains of one of the salts or all three combined, three times a day, and little is gained therapeutically in modifications or adjustments of the dosage. What is seemingly required is that a more or less permanent daily amount shall be ingested. The clinical data upon which the drug amount may be based is the length of interval that exists between attacks, the time of day they usually occur, and the patient's general tolerance of the bromide. As a matter of practical value one may at times throw the attack into different periods of the day by giving the maximum of bromide dosage just before the expected time of seizure. Many physicians adopt the daily variation of bromide with a steplike increase of dosage for several days before the expected attack. This is usually as futile a procedure as that of a sudden induction of bromism at the outset of treatment, the character of which is too well known to the experienced therapist for detailment here. In point of fact the induction of bromism to any marked degree or extent of time almost invariably does harm. Above all, the proper functioning of the gastrointestinal and circulatory apparatus is absolutely essential. If one is intent upon high dosage of bromide the proper attention may do away with its often superficial defects by observing a plan of precaution which I have employed (1). The principle of high dosage of bromide may be looked upon as a form of hyperbromidism, bromide intoxication, or poisoning. The drug is given in a steadily increasing dose, as that of iodide in specific disease. The patient has high rectal irrigations once or twice daily to reduce the amount of congestive catarrh, to eliminate toxins induced by faulty metabolism or deficient oxidation, and for its diuretic effect. The patient is also given prolonged hot packs and baths at night for diaphoretic effect, and cold douches, sprays, and cold drip sheet treatment mornings to stimulate the peripheral sensory nerves and to preserve vasomotor tone. Vigorous deep massage is steadily maintained to cleanse the muscular circulation. The inordinate tendency to local stasis of circulation in the skin and its consequent depression of the skin function shown in acne, etc., is corrected by face packs, hot moist bran applications, and mild stimulation of ointment applied at night. Mouth and nasal cleanliness, occasional lavage of the stomach and large quantities of aerated vichy (two or three quarts daily) are absolutely necessary. Incipient heart failure may be gauged by the second pulmonic sound and the degree of splitting of the second tone. The latter is easily controlled by strychnine and digitalis. The food is always light, highly nutritious but not too concentrated; no meats are allowed. Bromides are generally given in plenty of water or vichy. Of recent years sodium bromide or triple bromides made into an effervescent tablet fulfills the latter requirement very well. If one is depending upon the bromide to induce a permanent arrest of attacks, its steady administration is necessary for at least two years after the last attack before it may be safely discontinued. Even then a gradual withdrawal is necessary covering a period of another year at least. But cures by the bromide treatment are usually not to be expected. If the fits are not con-

trolled by 60 grains a day, the question arises whether the epilepsy or the bromide is the greater evil. It is of frequent experience to see patients go months without fits but with a loss of mental and physical activity due to the medication. Among the ill effects of the bromides may be seen irritability, melancholia, bad temper, suicidal or homicidal tendencies, and temporary delusions. The secret of obtaining successful action with the bromides lies in the judicious method of their administration, and in carefully selecting each case for their use.

A salt free diet, inconvenient to maintain though it may be, is of value in epileptics as they are able to take smaller doses of bromide with the same efficacy as higher doses without manifest bromism. It is claimed that those taking the salt poor diet use a part of the sodium of the sodium bromide to replace the sodium of the decreased sodium chlorine in the bodily economy; thus perhaps a more fixed and stable combination of the medication is held in the tissue. Sodium bromide is not only quite palatable, but it is also cheap and is not inferior to any of the synthetic products.

As an emergency prescription, the following has been prescribed:

Potassium bromide	grs.	LX
Chloral hydrate	grs.	XX
Morphia sulphate	grs.	⅛
Tinct opii deod	M.	IV

Aqua ad. q. s. fiat Z j.

In psychic epilepsy, or in the psychic epileptic equivalent, the emergency prescription is generally not effective; the psychomotor violence in the latter is too great to respond to the bromides alone. In various forms of epileptic mania they are practically of little value, and the same is true of their use in most of the epilepsies due to recent trauma. Here they are actually harmful before the operation as they suppress important phenomena which may indicate the seat of the lesion. After an operation, and in longstanding traumatic conditions, they are more admissible.

The idiopathic grand mal epileptic of vigorous constitution and good digestion is the type of patient who does best under the continuous use of the bromides. The size of the initial dose must be regulated by the character of the fit and by the manner in which the drug is given; beyond the third or fourth year, age has but little to do with it. In most cases it should be given to the point of toleration or to the point required to control the attacks. This can be determined only after trial. Hypodermic use of the bromide salts is rarely called for. It is occasionally employed in status epilepticus, and usually causes abscess and a scar.

Notwithstanding the length of time that we have known the bromides to lessen the tendency to spontaneous discharges, we have no precise knowledge of the method of their action. That they act in consequence of the presence of the element bromine there can be no doubt. Bromide is said to cause contraction of the small vessels; but if it has this effect, it is not likely that its influence on seizures is thus produced. Bromides may be considered important in their efficacy in suppressing attacks, for thus free intervals are obtained and time is given for more tedious but more lasting forms of treatment to become of permanent service.

It is unnecessary to enumerate the various drugs that have been used in epilepsy. They are legion, and include codeine, borax, chloral hydrate, amylene hydrate, nitroglycerin, zinc, solanum carolinense, simulo, trional, chloroform, and the coal tar derivatives.

The general use of luminal in epilepsy has been only a matter of several years. Adverse reports of its insidious effects in producing physical and mental deterioration have been made. On the other hand many report the most signal good effects from its use. The latter are so enthusiastic as to acclaim it the most outstanding feature in the advancement of the treatment of epilepsy in recent years. Epileptics who do poorly on bromides are often amenable, for a time at least, to the action of luminal; this advantage coupled with the absence of the usual bromism which follows the prolonged or excessive use of bromide, makes it a popular remedy with the physician as well as the patient who desires to keep the nature of his disorder a secret. In an extensive experience with the drug I have known but two cases radically helped by its administration. The dose ranged from three fourths to two and a half grains daily in divided doses or one single dose at night on retiring. The marked hypnogogic effect of the drug somewhat hinders its administration by day. More extended and carefully controlled experience of the effects of this drug are needed to finally establish its place in our epileptic armamentorium, but present studies would seem to point that luminal will not displace the bromides in their deserved first place in treatment. Neither remedy is a habit forming drug. In case of recurrence of attacks after a prolonged free interval the epileptic is often intractable to a renewed administration of either drug, but careful analysis usually shows that the mishap is really not due to the inefficacy of the renewed use of sedatives which are again called for but rather to the progression of the disease, or some intercurrent mishap which at least enlarges and deepens the clinical significance of the disorder. The sudden withdrawal of sedatives for one reason or another often entails a series of attacks or status itself.

To what end are the practical plans of treatment of the epileptic directed? Underlying all of them is the principle that the epileptic and not his seizures is to be treated. What is really aimed at is, first, to adjust the epileptic to a well ordered simple life to which he can easily adapt physically and mentally. Now bromides and sedatives lower the epileptic's resistance to difficult adaptations. His whole motorial and sensorial responses are made more difficult for him.

To this extent the sedatives are harmful. Why, then, are they still so generally used? Perhaps the physician really hopes to reach the proper degree of sedation to take off the overstress, physical and mental, without paralyzing the patient's adaptability to his environment. But unfortunately this cannot be done, and in most cases the sedatives are sooner or later discarded. How, then, may a mental stability be obtained for the irritable, egoistic, selfcentred and supersensitive epileptic? We are again thrown back upon a strict analysis of the patient's peculiar makeup and its instinctive demands.

(*To be continued*)

Comments on Pedophilia

ERNEST E. HADLEY, M.D.
Washington, D. C.

"He who recalls an object that has once charmed him desires to possess it again, and under the same circumstances." SPINOZA.

Pedophilia, if defined as an abnormally accentuated fondness for children, occasions no profound negative reactions. Nothing is more usual than a frank and open affection for children. But when one reads of a brutal sexual attack on a child, the mind is filled with horror, or as may be. For this manifestation of exaggerated pedophilia, pity is extended to the unfortunate child, punishment is meted out to the unfortunate perpetrator of the deed, and mankind goes on loving children as is their natural bent, right and proper. Children require love and affection, with adult guidance by example. Adults need the love and affection of little children. We cannot here undertake an ethical-moral disquisition on the facts that a lack of love in one instance, or a too sensuous expression in another may exert unusual baneful influences on the child.

The granting of a somewhat general fondness for children paves the way for the presentation of some material, brought up during the analytical investigations of a patient, bordering on the pathological. The patient is a male of twenty-five years, a student of a graduate school. The rather extensive dreams, associations and explanations occasioned thereby, as relates to the problem as a whole, may be omitted. Suffice it to say that the major problem concerned emotional fluctuations, a partial impotence and an ejaculatio precox, with a correspondingly unsatisfactory social adjustment. The experiential data relating to the pedophilia may be collated, as follows:

The patient's mother prolonged his nursing period to an age from which he retained conscious impressions of the weaning process. Against this, he reacted with all the energy of which he was capable. Unsuccessful in his attempt to retain a method of gratification so satisfactory to his perceived needs, there was an outpouring of blind rage and hate toward all who seemed in any way in league against him. All the more sinister in that it was a futile powerless effort to destroy an unyielding system. Later on in life, this upsurging emotion of blind fury, rage and hate was reduplicated again and again when balked in some much desired procedure. But the child's love needs, vastly overstimulated by the prolonged and erotic union with the mother, were destined, by the very nature of the urge, to find some means of satisfaction. One may call it fate or chance, but very probably it was the exigencies of the situation which directed the child's attention to a neighbor girl of his own age. At any rate, unable longer to obtain any measure of love from the mother as he knew it, he directed to the girl what seemed almost insatiable cravings and satisfied them in practically the only way he knew how, after the fashion of the nursling he had not ceased to be, emotionally. It is probably of no little importance that the girl seemed as erotic as he. At any rate, a new experience was added to his fast accumulating methods of sexual expression. Whilst he first sought for her breasts and found them quite disappointingly immature, she with greater wisdom uncovered his genitalia and he, through the suggestion offered, we may suppose, by her behavior, sought for its analogy upon the body of his new love. Rising above the disappointment offered by her lack of a phallus, his desire to suckle led him to make use of what he found. Thus, the boy, by way of cunnilingus, found in the girl a direct substitute for the mother and undoubtedly the weaning, so far as the mother was concerned, seemed eminently successful. Too, we may assume, the girl by means of fellatio found satisfaction in the boy for similar motives inasmuch as together they for many months satisfied their cravings quite mutually. The patient had a very dim recollection of the exact circumstances surrounding the termination of the affair with this first little girl whose name he has not yet recalled. It is probable that she moved with her parents to another part of the city during the latter part of his fourth year. It must have been shortly thereafter that his next notable sexual experience began.

Quite frequently there came to visit at his home some people from a neighboring city. On such occasions these people, a man and a woman as he vaguely remembers and a little girl whom he clearly remembers, were obliged to, or at least did, remain at his home all night. This little girl, "Stella," and he were placed to sleep in the same bed. It was not long before the same mutual performance as with the first little girl occurred. Only here he remembers for the first time violent erections and a predominance of interest in what the little girl was doing to him. Other than the fact that the first little girl performed fellatio upon him, he recalls no particular interest in the act. But in this instance, with Stella, there was distinctly more interest in the oral manipulation of his penis by her than his own oral performance upon her genitals. On what was perhaps the last of a number of similar activities with Stella, he hurt her in some way with his erect and turgid organ in her mouth. In spite of the fact that her cries were sufficient to attract the attention of someone, probably the girl's mother, who so far as he knew strove in vain to ascertain the cause of her complaints, he felt no remorse for the distress he had caused her. On the other hand, he remembered quite vividly the lustful sensations occasioned. As he said, in recalling the incident, "I must have felt that I had really done something to her." Whether or not he had observed the father inflicting what might appear to be injury upon the mother remains unknown. Abundant references to pleasure in hurting small animals, especially pets, were ecphoriated and relate by sequence, association and analogy to this early exemplification of sadism with Stella.

The next few experiences which seem directly related to the phase under discussion deal largely with fantasies. On one occasion, it seems that a baby cousin was asleep with her genitals quite uncovered

in her bed when our patient espied her. For some time he lingered about the bed with a marked erection imagining how he would like to manipulate her. The probability of her crying out and attracting attention to him seems to have been the deterrent. Play activities with his girl cousins, of whom he had several his own age and younger, were so directed that he came as closely in contact with their genitalia as possible. He liked very much to carry them by placing them astride his clasped hands in such a manner that his hands came in contact with concealed parts. Frequently, he pinched and hurt them in his play. He sought every opportunity to see their pudenda and played roughly with them, as he says, so as to disarrange their clothing for this purpose. All of these things gave him a good deal of lustful gratification. Frequently, when there were no little girls with whom he could play, he would suck at various available parts of his own anatomy, imagining meanwhile that it represented a cunnus. A few attempts were made to perform fellatio upon himself, but without success. Somewhat later, he did play with one boy in mutual fellatio but this did not appear to have given him any particular measure of satisfaction by comparison with such experiences with little girls.

In his seventh or eighth year he became very much attached to a girl, by the name of Lucy, about his own age and on several occasions attempted to introduce his penis in her vagina, though without success. This followed attempts upon his part to perform cunnilingus upon her. She, it was, who directed him in the attempted coitus. Her persistence in the matter seems not to have gained her the expected pleasure since it appears their love affair was interrupted largely on account of the violence of his endeavors. The later attempts at coitus with Lucy were accompanied by a consuming anger and hate. In this connection it is interesting to note that of all the little girls with whom he played sexually in childhood, Lucy is the only one for whom he felt or retained an aversion.

In the experiences of the next few years there seems little to mention that concerns the present theme except masturbatory efforts with fantasies of being with little girls. During this period and the ensuing years to use his own words, he "fell in and out of love with girls on the slightest provocation." With a majority of these girls his erotic procedures were elaborated no further than in kissing, about the mouth and face.

About his twelfth year he became acquainted with a little girl named Anna who acceded to his request to play with him sexually. When first he performed cunnilingus upon her he encountered a previously unexperienced heightening of the lustful sensations. Quite beside himself with excitement, he then made a vigorous though unsuccessful attempt to effect a complete intromission. He was rewarded with his first ejaculatio and a degree of pleasure which he thought never afterward to have attained. The trauma to this little girl proved a barrier to further sexual activity with her, but the experience afforded food for fantasy to the exclusion of all other for some time to come.

In his sophomore year in High School he became enamoured with a girl little in physique but only three years his junior. He liked her very much and called to see her at every opportunity. She seemed to him to be the fulfilment of an ideal of purity and goodness which he was now endeavoring to foster. At the same time he was making a tentative examination of the theories of the church in an attempt to strengthen and fortify his anchorage in an ever widening and complex social system. To terminate our digression at this point I may say that the church failed miserably so far as our young sophist was concerned in offering any measure of solace to his urgent needs. To the little girl Evelyn he did turn with some degree of faith. But here again under cover of a shy, demure and saintly sweet external appearance throbbed a passionate being, which coupled with his faintly repressed passion led him into new ordeals of conflict. When the, to him, concealed emotion of Evelyn broke through the barriers and in a trice she stood before him partially disrobed, a palpitating savage, he was illy prepared for the storm of mixed emotions thereby stimulated. From somewhere, perhaps partially from the newer social strivings came the warning thoughts that here was a situation he must avoid. Evelyn, at any rate, had no such thoughts. The die was cast. The ensuing struggle left but little in memory of his actual emotions at that time. Whether he was struggling to get away from her, or struggling to accomplish the dictates of natural desire, or both at once, or what, is lost somehow in the confusion of the moment. That a wild struggle did occur and that therein he experienced an unexpected orgasm he had no doubt. And in the moment that followed, the desire emotions spent, he struck at her with unleased destructive passions as at a vile and venomous thing.

LATER YEARS

In the next few years, alternating periods of intense intellectual pursuits during which he was seclusive, thoughtful and unpassionate and periods in which he was gay, lively, sociable, hypomanic, intrigued for the moment with the charm of some particular girl, characterized his attempts to find himself and the key which would unlock the doors of happiness. His premeditated attempts at sexual intercourse were unsatisfactory. At the moment of contact with the prostitute he suffered a precocious ejaculation or failed entirely to develop an erection. With the girls of his social acquaintance, he either suffered an orgasm in the forepleasure rites, or if actually won sexually, he became quite impotent. It followed that periods of intense application to study lengthened and he completed a collegiate course with a major in philosophy. The period following his graduation left him stranded. He attempted various occupational pursuits from the clerical to the farm. He did not find any pleasure in work nor did he seem adapted to the work he undertook. Depressed and dissatisfied with his situation, he entertained fleeting thoughts of suicide. More often he entertained schemes involving wholesale destruction of the social system or planned on devising some new social superstructure in which he and a select few assistants would be more or less omnipotent. While he recognized his everchanging fantasies as such, that did not diminish the pleasure of the moment. Finally he decided to return to the University for graduate study and passed a very pleasant year. During this

year he lived alone and devoted all of his time to study.

In the beginning of his second year he lived with his sister, several years his senior, and her family, who came to live in this city. The sister had three children, all girls, three, five and seven years of age, respectively. At the same time he had occasion to meet a small "sickly" girl who lived in an adjoining apartment. This girl attracted him and he began paying her attentions which were gratefully accepted. In spite of her, to him, obvious unsuitability for marriage, because of her apparent ill health, he proposed and was accepted. During this period he became more and more restless in his sister's home. This situation became acute when a growing interest in his little nieces began to evidence definitely pathological traits. At first, occasionally, then more frequently, he became tormented with a desire to see their genitalia, to kiss them and to perform sexually upon them. Rather adroitly he found ways in which he might be left with the children while the sister made calls, or went shopping. His studies kept him at home and "it would be no trouble." Again, he reenacted the rough play activities and the tricks of his own childhood with little girls until he obtained a view of their genitals and could kiss them furtively on such parts without its seeming to be unnatural (as he thought) to them. Now, it was, that his impotence vanished. He enjoyed almost unceasing erections when with them so that masturbation satiated him only after several repetitions. Then one day he sat the little niece astride his turgid penis and permitted her to play horsey in a new way. The resultant orgasm seemed to restore his confidence in his potency and he began anew to develop interest in girls of his age. No further overt acts were consummated with little girls but he began to have thoughts of raping them violently and then disposing of their bodies in some fashion. A persistent recurrence of such ideas alarmed him and he contemplated leaving his sister's home. Little girls he saw on the street became the object of his colorful fantasies. One day he picked up a little girl on the street. She was lost or had wandered away from her home. He petted her until she stopped her crying and told her name. Without harming her in any way, he restored her to an anxious parent with some slight feeling of confusion in answering questions as to where he had found her, how he had learned where she lived, etc. In order to satisfy his inordinate desires he began a systematic attempt with girls of easy virtue. Here again his potency failed him at the crucial moment or the unsatisfying premature ejaculation occurred. In this condition he was referred to me for treatment.

DATA

The lifting of certain facts out of their perspective gives a onesided view of the personality of our patient. But since here, we are not concerned with his virtues—virtue for that matter being an idea which lends itself to grave distortion about as often as there are individuals who suppose they possess it—the events above related if not fully descriptive yet admit of consideration from an analytic standpoint. In this discussion it seems unnecessary to point out that the clarification of the entire problem of pedophilia cannot be made upon the basis of the material presented, or for that matter on any one case. If, however, some thought may be activated toward a subject none too prominent in our literature, the effort will have achieved its purpose.

The overvaluation of preadolescent cravings, which had served hitherto as an effective barrier to heterosexual function in our patient, was buttressed upon the prolongation of the mother-infant relationship. While our data includes no reliable information regarding the mother's behavior to the child, other than this prolongation of the nursing period, such later attention was given to his adult comforts as would permit speculating an early erotic interest in him. One cannot but wish that some statements might be secured from the mother as to how she rationalized the delay in his nutritional education. There was an elder sister, so, at least, we may assume that it did not result from inexperience. It too seems but reasonable to suppose that the mother did not find his manipulations of her nipple particularly painful, even after the eruption of several of the patient's teeth.

Not to digress upon warped pleasure taking on the part of the mother, we may emphasize the effect of such delayed weaning upon the partition between sucking as a step toward the satisfaction of nutritional needs and as in itself a pleasure source. Abraham (1) says that:

"An intense pleasure in the act of sucking is a feature of infancy. We have familiarized ourselves with the view that this pleasure is not to be ascribed entirely to the process of taking food, but that it is conditioned in a high degree by the significance of the mouth as an erotogenic zone.

"This primitive way of obtaining pleasure is never completely abandoned by human beings; on the contrary, it persists under all kinds of disguises during the whole of life, and even experiences reenforcement at times in particular circumstances. Nevertheless, the growth of the child, both physically and mentally, involves a far reaching renunciation of the original pleasure in sucking. Now observation shows that every renunciation of pleasure only takes place by way of exchange. It is just that process of renunciation and the course it takes under different conditions which merits our attention."

Sullivan (2), in his discussion of the oral complex, holds that in sucking "—chemical necessity is the proximate cause," but the "—neuromuscular patterns are prearranged. The sensory impressions from the tactile equipment of the lips leads to protrusion and the sucking of any suitable object brought into contact." While this may not appear at first glance to be entirely explanatory of the facts in our case, it is to be noted that the boy sought the girl's nipple and found it disappointing. Her prompt recourse to his penis may be assumed to have reminded him of its relative qualities, particularly its greater magnitude than the nipple that he had just uncovered. It is unfortunate that, as is so often the case, we cannot recover the mental processes he actually experienced on observing that the phallus was lacking on the little girl. Suffice it that he found something to suck, and this while he was being sucked—functioning in the mother rôle. The relation of this to psychical hermaphroditism will be emphasized later.

Environmental factors which supplied the little girl for the further satisfaction of the sucking impulse permits a linking up of the primary and secondary

objects—mother and little girl—and provides an explanation of later pedophilic interests in the incest urge. The erection of a physical barrier to the continuation of mouth-nipple union with the mother, added to the alleged instinctual incest barrier, makes possible an investiture of interest in the little girl of overshadowing symbol importance. The relegation of the primary love-object to a position of apparent insignificance is more or less in keeping with the usual process of psychosexual evolution. However, in this instance, there occurs a direction of the love impulse, with slight modification in its method of satisfaction, to an object so sufficiently opposite as to carry a minimum of similarity to the first. While the sucking continues for a time still to be merely sucking, the object is not only no longer a superior but an equal or inferior, and the use of the new object includes the important factor of her physical act to and on him. One might ponder, in passing, on the relation of her act, by analogous thinking, to kissing by his mother. The point I emphasize in confirmation, as I see it, of the view of Abraham is that our patient at the instance of weaning has in the renunciation of love for the mother merely made an exchange of objects.

From the viewpoint of this sucking impulse one may see in his later behavior during childhood and the chronologically adult period almost a compulsion to repeat an experience of such cherished import. This desire to repeat an experience, to repossess an object or an object substitute as near like the one which so erotically charmed him in childhood is of particular significance to the understanding of the pedophilia. While this inordinate fondness for little children, this pedophilia, in the chronologically adult person might preferably be interpreted as a regressive mechanism, it seems clumsy to refer to regression when the libidinous tendencies have not proceeded to higher biologic aims. The senile, tabetic, paretic, sclerotic, etc., who resort to pedophilia, may fit more appropriately in the category of regressive behavior. Bleuler (3), who presumes that pedophilia "occurs perhaps most frequently as an acquired anomaly in senile dementia," notes that "it is not rare also among imbeciles, *faute de mieux*." My own contact with the literature does not bear out the idea that pedophilia occurs most frequently in the senile. Bloch (4) considers pedophilia as "a very widely diffused phenomenon." He goes on to say that, "It arises from superstitious grounds; as, for example, from the belief which prevails in many countries that venereal diseases are cured by copulation with an intact child. The primeval belief that intercourse with immature girls prolonged life, that an emanation from them rejuvenated old men (the socalled "Shunammitism"), led in former times, and leads even at the present day to acts of fornication with children. Less commonly do timidity and impotence on the part of adult men, rendering intercourse with adult woman difficult or impossible, give rise to seduction or rape of defenseless and unsuspicious children."

In connection with the comments of Bloch upon the relation of pedophilia to superstition, I have made corroborative observations upon the American negroes among whom there exists a rather widespread belief that gonorrhea may be cured by sexual relations with little girls. Bloch adds a footnote from a report in the *Archives for Criminal Anthropology* (16: 173, 1904) concerning "a peasant affected with venereal ulcers," who, "having been advised that a cure could only be obtained by intercourse with a pure virgin, had sexual relations with his own daughter and—was cured!!" Experience in pediatric clinics gives ample evidence in the shape of venereal infection on the prevalence of such superstition among the ignorant, even today.

While Shunammitism, or rejuvenation by means of intercourse with immature girls, failed miserably with King David (v. I *Kings* 1, 1-4); that is to say, when the girl was brought before the dying king, he "begat no heat," showed no signs of potency, we do see quite clearly how successfully the potency of our otherwise impotent patient was restored when brought into contact with the little girls. The whole theory of Shunammitism seems based upon the existence of a pedophilia.

Sullivan, in a forthcoming study on sexual evolution, insists upon the factor of convenience in explaining some of these cases. To him, the adolescent male seeks an object not so much for love—which at this time must be of great "purity"—but for the satisfaction of crude sexual impulses. Bestiality is to such an one, if of any cultural developments, less attractive than the use of a human. Only prostitutes, who are horrible because of the incest barrier, and children and youths are available. Whether girls—who are apt to be considered difficult to approach, or boys shall be his objects, is determined by his previous experience. If circumstance offers children—those well below the level of his development—and less troubled by those scruples which he has developed—they are peculiarly apt for his purpose.

Pfister (5) reports a case of pedophilia in a youth of twenty-three whose reaction to this condition was: "It is much easier to rape a child."

While we do not deny the face value of opportunity, fear of impregnation, failures in repression through organic alteration, etc., these considerations do not alter the fact that this method of sexual expression relates to a stage in psychosexual evolution, which, were the truth known, might be shown to be a dominant force throughout life.

Laurent, as quoted by Bloch, dramatically described a "burning out" process in speaking of "debauchees" and "exhausted roues." He writes: "They have used and misused woman; they have explored all the stages of natural and unnatural love; they have visited Lesbos and Paphos; and they have experienced every possible sexual artificiality. Their sexual desires have become torpid, their manliness is on the decline, and sexual death approaches. But the more exhausted they are, the less willing are they patiently to acquiesce in their loss. It is with them as with inebriates who are full to the throat and still continue to drink. One day they notice a little girl in the street and feel stimulated by her youthful charms. Thus, their love begins." Perhaps it would be better to say that, in so far as the adult is concerned, a manifestation of pedophilia becomes evident.

The impulse gains expression, and in our patient appears to spring from the autoerotic period of childhood. The little girl was subjectified as a part of his

pleasure world. The object was to please himself, and here in the case of the little girl no conquest was necessary. She existed for his own benefit. His later masturbation, interest in little girls and those of easy virtue may be seen as a reflection from this period where his desires were so easily gratified. Again, in that later period when the existing social system demanded behavior more in keeping with biologic aims, we see the element of annihilation in phantasy of all that stood between him and the fulfilment of his desires. This emotional reaction of hate toward society is easily seen as a replica of that uprushing of hate toward the mother which occurred on the institution of weaning. The purer sadistic fantasies of forcibly raping little girls and killing them may be seen as an extension of the lustful sensations achieved on hurting the little girl, Stella. But killing little girls, because of the fusion of the mother symbol with the little girl symbol may also have been the desire to destroy the incest craving. Further evidence of sadism which seems to exist in his striking the girl, Evelyn, who had so suddenly become repellent to him, is of interest in the light of the incest motive. Stekel (6) presents two interesting case reports. One, an artist of sixty-two who becoming potent after the death of his wife, brutally attacked a servant who had infantile sexual organs, after which he paid her and thereafter satisfied his awakened interest with his young students. It appears his impotency was a defense mechanism. He dared not become potent lest he murder his wife. The other report concerned a village schoolteacher of twenty-six whose impotence, as brought out by an abundance of dream analyses, involved a religious complex and was a moral defense against his sadism. The sadism took origin from his youngest sister for whom he had a marked pedophilic and incidently incestuous craving. In speaking of the pedophilia in the aged, this author is inclined to the belief that it originates in the love of one's own youth and is a backward direction through narcisism to the infantile state of the sexual impulse. The aged one desires to fulfill his pathological wish before he makes his exit off the stage of life.

Narcisism, as displayed by our patient, seems to have belonged more nearly to the autoerotic phase of love of himself rather than to its extension in the homosexual phase of someone like himself. His inclinations clinging ever to a mutually erotic and satisfactory situation with a little girl was irritated only by the inimical social system and the promptings of the biological law of recreative procreation which he transgressed. One must keep clearly in mind in dealing with pedophilia the distinction between that mediating homosexuality, and the more pure perversion which is our subject.

A nice question concerning the significance of cunnilingus is raised in this case by his later elaboration of the performance to include the insertion of his tongue in the vagina. A double rôle of the aggressive male may perhaps be seen in the later mutual affairs with little girls. The girl is, indeed, the passive agent and his bisexual component in two senses. Mutual fellatio with the little boy may further illustrate an hermaphroditism, where he plays the rôle of passive female and aggressive male. It is one of the most regrettable things that, because of the interruption of this analytic investigation, more data on this solitary event could not be secured. Weighty factors must certainly have had their effect to destroy his satisfaction in this procedure, to isolate it from repetition. One may wonder if he had assimilated fellatio entirely into his complex of the female, so that on the one hand to perform it himself was too feminine, and to be directed to the more adult coitus too far from his adopted route of gratification with the female as shown by his later impotence. The affair with Lucy is especially emphatic in connection with this hermaphroditism and the striving to masculine activity. Failing signally to satisfy her demand for the more adult coitus, he directed to her a hate which survived for years, a hate which cannot but be a loathing of a dimly realized inadequacy.

There appears to be a prevailing belief that homosexuals seldom, if ever, resort to pedophilia of the type under discussion. This is readily understood when homosexuality is considered higher in the scale of psychosexual evolution. Pedophilia as here understood does not relate to an expression of love towards the adolescent youth, as in the Grecian period, but rather toward little children. One of the philosophers of that cultural epoch, although accepting heterosexual love as divine, propagated the idea of a stud farm and recognized in youth a more exalted expression of love, partly from the idea of giving without return. As in those days intellectual pursuits are ofttimes the bridge transporting youth through adolescence to manhood, but the intensity of the early strivings of our patient were only temporarily displaced by his student activities. Practically, however, it acted effectively in that manner sometimes understood as sublimation.

However extensive a discussion of pedophilia might be, it would be inadequate were nothing said concerning its opposite, though not exact antithesis, the misopedia. Hate toward children is observed in so many little disguises in everyday life that its occurrence in the popular sense is interpreted by the average mother as "cattiness," being "selfcentred," "interferes with their parties," *et cetra, et cetra.* Extensions of misopedia are often observed in unwarranted irritation; complaints about their behavior, their touching and upsetting things; remarks such as "they ought to be whipped—or made to mind" and certain advice to others as to "How to raise children." Such disguised forms of misopedia may be interpreted as a defense mechanism against erotic cravings.

Note may be made of the case in which one's child may by a process of identification be a too potent reminder of their own autoerotism. This is an even more regrettable result of such defense, than the prevalent mishandling of the children's sexual problems by parents. It actually seems in some cases this defensive lack of frankness, stirring unpleasant affect because it is dimly appreciated, is projected as an actual misopedia. Antagonism to an unborn child has been quite clearly brought out in my work as an unwillingness to accept the responsibilities of motherhood, an antagonism to the husband, disinclination to accept the pregnancy as not to have been the result of a father impregnation fantasy, or its rejection because it represents the "reward of sin." In our patient, the description of whose pedophilia we have presented, the desire to kill the object of his affection seems to have been rooted in a terrorizing fear of the

incest craving. Oppenheim (7), whose article on misopedia is the only available treatise on the subject that I have at the moment of writing, finds in each of his five cases a disharmony between the husband and wife, and a morbid background from which he infers that the hatred directed toward the child may have existed prior to its birth. He points out, however, that the hatred may have arisen from the mother-daughter conflict, especially since, of the five cases reported, in each of which a child was killed by its mother, four were female children.

[1]Since this article was written, information has been received from a reliable source to the effect that the individual, the subject of the above communication, has been making a satisfactory adjustment. This is of especial interest in view of the fact that the analytical study was prematurely interrupted. There are these rare instances in which a partial insight is sufficient to give such impetus to the outflowing libido that object investiture of a more adult order is obtained.

In the interval following upon the termination of treatment in this case, this individual—formerly one dominated by his early fixation in such fashion as to motivate him to deplorable conduct—has entered into the heterosexual stage of libido development and is the father of a son, six months old.

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The Treatment of the Psychoneuroses by the Removal of Focal Infection

E. C. DUDLEY, M.D.
Chicago

I make no claim as a psychoneurologist. The chief purpose of this paper is to invite discussion. At the outset permit me to quote two distinguished physicians whose intemperate language doubtless was due to the heat of discussion; one is a neurologist of deserved eminence, the other a dental and oral surgeon of international fame. One is reported to have said that "anyone who removes a colon for insanity is criminal"; the other went a step further and is reported as saying that the managers of the State Hospital for the Insane at Trenton, New Jersey, "are themselves insane." Such comments more or less mollified or intensified have been so widely broadcast by men whose opinions we must respect that one is forced to ask the question how far, if at all, these opinions are merely casual and indeterminate. Why does a profession usually openminded and keen for new and useful ideas condemn these pioneers in the treatment of the insane by the removal of focal infections and at the same time accept similar treatment for so many other disorders? Why this singular exception to a law which following the epoch making work of Billings, Rosenow and Gilmer has become classic? The reason is not remote; it obviously is a protest against the many disappointing results arising from surgical operations performed upon insane patients without just regard to indication, to purpose or to effect. The colon, for example, was recognized by former enthusiasts as the cesspool of the body and as such given undue importance. Then followed in quick succession numerous operations, sometimes with scant regard for anatomical, diagnostic or pathological indications. Some of the results were deplorable. Worst of all was the sidetracking of the colon, an operation devised to avoid the more dangerous colectomy. This procedure, now relegated to the dark ages of abdominal surgery, united the lower ileum to the lower colon and threw the remaining large bowel out of circulation, leaving it a quagmire in the abdominal cavity. All this and more goes to explain the antagonistic attitude especially and justly toward the older protagonists of colonic surgery. The question now is, how far a judicial examination of defocalization at the present time will justify the criticism.

History appears to repeat itself. Witness McDowell, the first ovariotomist, characterized in a medical journal of Philadelphia as an irresponsible Kentucky backwoodsman. In France as an audacious American, by an Edinborough editor as a reckless adventurer; this editor on his knees finally asked forgiveness of Almighty God and of Ephraim McDowell. The early ovariotomists were stigmatized as "belly rippers." Scarcely a generation ago some men were anathematized as public enemies who ought not to be at large because they advocate appendectomy. Fifty years ago as a young intern I assisted a deservedly recognized surgeon of New York in numerous ovariotomies, with one hundred per cent. of mortality. The abdominal cavity even then was a *terra incognita.*

It is amusing yet instructive to look back not so long ago on the withering scorn with which the old family doctor replied to his humble patient who told him that he had a cold or a sore throat which had "settled in my knee or my back." This was of course focal infection and serves to illustrate how the common people through the ages have descried and foreshadowed great discoveries which ultimately the scientific world was compelled to recognize. Now there is evidence that much of what has been regarded as essentially brain or nerve disease turns out to be disease in distant organs. This is quite analogous to delirium in typhoid fever in a person of otherwise normal brain.

I confess that only a short time ago I looked upon colectomy and other defocalizing measures as questionable procedures, rarely indicated and of doubtful value in the treatment of the psychoneuroses, but intemperate criticism sometimes strengthens a cause

and so one day I found myself impaled on the horns of a dilemma and perplexed over the question, a crucial question. Why have we thus favorably generalized on focal infection in its relation to other disorders with the sole exception of the psychoneuroses? Is it possible that any considerable proportion of these cases may have otherwise normal or nearly normal brains and nervous systems overburdened with infection from distant organs? Does the analogy hold with focal infection as a cause, for example, of arthritis, myocarditis and nephritis? Supplemental to this perplexing situation came the startling statement that the State Hospital for the Insane at Trenton had saved the state an approximate two million dollars in six years by its pioneer work in the treatment of the insane by the removal of focal infections. This saving is said to have been effected by the discharge of patients who otherwise would have remained a charge upon the state under the old custodial care. I went to Trenton where the medical director gave me *carte blanche* and personal conduct to every department.

I saw two total colectomies, for the removal of megacolons singularly alike in pathology. There were strictures at various points with corresponding extreme dilatations, the bowel wall being attenuated to the thinness of thin paper which thus would open the way for the transudation of fluids and gasses directly into the peritoneum. Apparently in parts the mucous and muscular coats were so atrophied as to leave little protective bowel wall, except the peritoneum. There were numerous pigmented patches indicating advanced degenerative changes. The glands in the adjacent mesentery were greatly enlarged, evidently by infection from the colon. Later in one private case I saw a megacolon, recently removed, nearly seven feet long with a sharp elbow kink between the ascending and transverse colon, with old adhesions to the duodenum and with all the above described pathology much exaggerated. Professor James Ewing, of Cornell University, on examination of this colon in my presence pronounced it to be one of the two most extreme specimens of pathological colonic changes he had ever seen, a colon which could not have performed its function for years.

PERSONAL CASES

I recall numerous cases in my own practice which on opening the abdomen gave forth a strong fecal odor which raised the question whether I had not accidentally opened the bowel. All these were doubtless cases in which transudation of gas had taken place through the attenuated bowel. A condition hitherto not recognized.

From my relations with the asylums and prisons of Illinois, as former President of the Board of Commissioners of Public Welfare, I am not unaware of the difficulties and discouragements, both legislative and professional, in securing equipment and finding qualified experts for such highly technical and special departments as laryngology, rhinology, x ray, bacteriology and especially oral genitourinary and abdominal surgery. It was gratifying to find much evidence of satisfactory equipment and efficiency in these departments.

The case records and followup reports would do credit to any general hospital. There was an abundance of illustrative pathological specimens, all classified and arranged for systematic study of morbid anatomy, including hundreds of colons, many of them megacolons with excessive pouching. In one specimen there was pouching of the pelvic colon to a diameter of not less than ten inches.

TRENTON HOSPITAL

Whatever the final verdict of the value of defocalization among the insane, it is certain that the history of focal infection never can be written without taking into account the work of the Trenton Hospital.

There are now available for study in the Trenton Hospital and in the private practice of members of its staff more than five hundred cases of colectomy and thousands of cases of minor defocalizations in other organs, surely a sufficient number upon which to form some sort of general idea of the value of these important procedures as a factor in the treatment of the psychoneuroses.

In colectomies alone I have seen enough pathology to indicate that the work is being done under diagnostic and pathological indications. I can only account for the recorded arrests and symptomatic relief from manic depression, epilepsy, dementia precox and other disorders on the hypothesis of unusual surgical judgment and technic. These impressions are strengthened by verbal reports of patients and members of their families.

In the well equipped and modern laboratory of the State Hospital, scrupulous care has been taken in the study of the post operative pathology. This study has also been aided by the McClintock Memorial Laboratory of New York.

The classification of insanity roughly falls under two groups: I, the organic group in which there are organic lesions of the brain; II, the functional group, also designated as the surgical group, in which presumably no significant anatomical brain lesions are present. This is an indefinite classification, since in many cases lesions may be unrecognizable even postmortem under the microscope and yet we cannot prove that they are not present. Clearly the functional cases would furnish the material for the surgical group. Since the characteristics of both groups may combine in many cases there are manifest difficulties in making a clear scientific definition of either group, but for practical purposes it is not difficult to exclude many cases from the surgical group, such as diabetics, alcoholics, victims of senile dementia and syphilitics. Nor is it difficult by exact diagnostic measures such as x ray to select promising cases for defocalization.

At Trenton only cases which on x ray, including the barium test, show positive colonic surgical indications are recognized as suitable for colectomy. I do not know the exact percentage but it is quite appreciable and is said to be increasing with improved diagnostic study.

The mortality of colectomy has been discouragingly high. In one series of 169 cases at the State Hospital it averaged thirty-one per cent. I understand that this mortality has been reduced in twenty-six cases, by improved technic, to sixteen per cent. This gives reason for hope that it may finally be reduced to the plane of the other more serious abdominal operations.

REPORT

Very significant is the report of Commissioner Lewis which he kindly sent me in the form of a personal letter.

State of New Jersey
DEPARTMENT OF INSTITUTIONS AND AGENCIES
December 17, 1925.

Dear Doctor Dudley:

I have your request for information relative to the economic results attributable to surgical defocalization and other medical treatments at the New Jersey State Hospital for the Insane at Trenton. Previous to 1918, under custodial care, free patients were a charge upon the State each for an average period of about fifteen years at a cost to the State of approximately $372.00 per capita per year.

About thirty-six per cent of the functional cases were discharged annually previous to 1918. This closely approximates the proportion of discharges then and now in other states. Since 1918 the number of annual discharges of functional cases has increased to over sixty per cent. A reasonable explanation of this increase could be attributed to surgical detoxication and other medical treatment. The savings are further increased by a reduction in the number of new buildings required and by medical follow up work with discharged patients. In the seven years, 1918-1925, the increased number of discharged patients who thereby ceased to be a charge upon the State have brought about a saving of over a million and one half dollars. Taken year by year through 1923 these savings appear on our records as follows:

1919	$ 31,174.00
1920	106,420.00
1921	243,588.00
1922	438,601.00
1923	692,437.00
*Total	$1,512,220.00

Should you wish to go minutely into the subject all our statistics and records are at your disposal. It is a far cry from the time when the insane were possessed of the Devil and were treated as we would treat the Devil if we could get hold of him. For example there was a statute in the State of New York authorizing the authorities to chain the insane whenever they got their hands on them.

Very truly yours,
(Signed) Burdette T. Lewis,
Commissioner.

*In a conversation with me Mr. Lewis states that the saving in 1914 will bring the total to an approximate $2,000,000.00.

I append the following statistical review taken from recently compiled records of the hospital and furnished to me by the medical director.

Two series, each of five hundred consecutive cases, have been studied, on the suggestion, as I am informed, of Professor Adolf Meyer of Johns Hopkins University, to determine results five years after admission. The first series embraced the old custodial methods, as in vogue, 1908-11, the second series was composed of patients treated by the modern methods of defocalization and admitted 1918-20. The treatment referred to consisted in the elimination of focal infection in the teeth, tonsils, gastrointestinal and genitourinary tracts.

These two series showed the following results at the end of five years:

First Series

Recovered	*Discharged unimproved*	*Died*	*Remaining in Hospital*
140	37	67	256

Second Series

Recovered	*Discharged unimproved*	*Died*	*Remaining in Hospital*
328	27	65	80

The most striking fact shown relates to the number of cases remaining as a charge upon the State. Of the custodial group there were 256, or fifty-one per cent., still in the hospital at the end of five years: of the defocalized group there remained only eighty, or sixteen per cent. These statistics explain the saving to taxpayers referred to in State Commissioner Lewis's letter. These statistics are now for the first time published.

It would be remarkable and exceptional indeed, if in the vast amount of new ground which has been broken and the diversified work which has been done there had not been some mistakes of judgment, some over enthusiastic claims, some inadvertent exaggeration of results based upon *post hoc non propter hoc reasoning*. On this subject I have no adequate data on which to deny or affirm, but this is not very pertinent to the subject, for such errors could hardly be so gross as materially to modify the results as reported.

I confess that I still retain some lingering courage of my prejudices. We want to know whether the Trenton Hospital is opening the way to a new departure in the treatment of the insane, I mean defocalization, in consequence of which any considerable number of the insane may be not merely improved but at least symptomatically relieved and returned to their homes as acceptable members of society. I refer to people who otherwise would remain for life under that classical custodial care which pertains to many asylums for the insane. Very long and very painful is the evolution of an idea.

If the claims for defocalization cannot be refuted they will have to stand. Clearly an unprejudiced nonpartisan discussion is in order. Judgment on *ex parte* testimony is not permissible; it outrages a fundamental principle in scientific morality.

Assuming that the figures of Commissioner Lewis are approximately correct for the two fifths of the insane of the State of New Jersey cared for in the Trenton Hospital, and basing an estimate on the population of the State of New York which according to the census of 1920 was more than three times that of the State of New Jersey. This does not take into account possible detoxication in suitable cases of the criminal insane, which might increase the saving materially. To this end it is herewith suggested that a new hospital for the surgical work of the insane be established near the city of New York where experts in the various departments would be available. This might very materially cut down the enormous appropriations now contemplated for the insane hospitals of the State and might well become an object lesson for the other states.

Respiratory Paralysis.—D. C. Elliott (*American Journal of Surgery*, Vol. XXXIX, No. 10) finds that some toxic reactions may follow caudal anesthesia either immediately or delayed, judging from our knowledge of two such reactions in a series of six hundred cases. Acute novocain poisoning may follow the puncture of the dura mater and the intraspinal injection of the solution or the absorption of the novocain into the systemic venous system, through the puncture of a large vertebral vein, and thence into the external iliac veins.

In spite of these possible dangers we believe that caudal anesthesia is relatively a most valuable form of regional technic and is a suitable and satisfactory procedure in various surgical, gynecological and obstetrical procedures. The procedure can be made more safe by the addition of a prophylactic dose of caffein sodium benozate into the solution injected as is done in intraspinal anesthesia.

Neurosis and Total Personality*

FRANZ ALEXANDER, M.D.

Berlin

When we consider the development of our views on psychoneurotic affections in a wide perspective, the line of this development may be characterized by the fact that we are coming more and more to regard the disease as the expression of the totality of the person. I should be doing our science an injustice if I did not, at the outset, ascribe this endeavor to it. However, the latest theoretical works of Freud denote an advance in this direction and have contributed essentially to the comprehension of the psychic phenomena of disease in all of their relations to the total personality. The criticism of these works even in psychoanalytic circles is not uniform, but I find the usual designation *speculation* to be wholly inappropriate. The reconstruction of the structure of the psychic apparatus as undertaken by Freud proceeds forcefully from the empirical material of analyses of neuroses and is continually confirmed anew by experience if one applies it to the individual case, and it shows us the way to investigate the finer structure of this apparatus.

One might also characterize the direction of development of psychoanalysis as follows: while at the outset our interest was directed in the first line to repressed content, to the expressions of repressed desires, we gradually occupied ourselves more and more with the nature of the repressing agency, with the motives and laws of repression. Somewhat crudely, although meeting with the essentials, we may say: in the beginning we learned about repression, while today we are to grasp the conception of the repressing agents. At first we had to learn the language of the unconscious in its material significance, and now we seek to understand its grammar and syntax. The formulation that at first we studied the libido and later the ego, is not entirely appropriate, because the repressing factor itself places the libido at its service. Think only of the moral masochism: we have to do here in the first place not with qualities but with differences of direction. One might say while the expressions of the repressed are centrifugal, the expressions of the repressing agencies are centripetal. Hence the expressions of the suppressed libido are violent, visible, while the working out of the suppression dynamically directed inwardly is invisible, and often merely inferred by deduction. So that that part of our science which investigates this field is not speculative and at most must often employ deduction proceeding from empirical facts. It is, however, no more speculative than the atomic doctrine which forms ideas of the structure of matter without being able to observe directly.

One obtains the impression that investigation of the repression is associated with still greater difficulties—we may and must express it as still greater resistance—than is the repressed content of the soul. This resistance is manifested only in this way, that the expressions of the libido were also formerly understood chronologically, although, especially in the hours of treatment, should the unconscious want of punishment be touched by the characteristic expression of the repressing agency, the cause of this particularly great resistance is obvious. We have long known that the neurotic symptom is the consequence of a miscarried repression, and that guilty of this miscarriage is the repressing instance itself. The remarks of Freud on the intimate relations of the superego to the *it* condense themselves in our performances to the complaint that in the neuroses the superego has entered into a secret alliance with the *it*. That by the superego the repressing agent is meant, need not be discussed further here—this is clearly apparent from the text of Freud's writings according to which the superego is the repressing instance, which was set up for the repression of the Œdipus complex. In the neuroses it fulfils its task insufficiently, it cannot deny its origin from the *it*, it often decrees cruel punishments and yet it is unable to prevent that the unmodified expressions of the *it* come to expression much more powerfully than in normal subjects. One obtains the indubitable impression that it is exactly through this punishment, through suffering, that the neurotic acquires the right to hold fast to the tendencies which are foreign to the ego. Be this as it may, in the neurotic personality equilibrium has been displaced in the direction of the repressed, the unadulterated *it* has preserved a high efficacy although its expressions are restricted to the fantasy life and to symptom formation. We will for this alteration first draw the repressing agency itself to responsibility. From this consideration it follows forcefully that it does not suffice to unmask the secret sense of the symptoms; rather are the neuroses attacked in the citadel by the treatment only when the mechanism of the symptom formation is discovered, when that psychic association becomes known which makes possible the formation of the symptoms. I would like to call this the economic analysis of the total personality. Only the unmasking of the secret alliance between the suppressed and the suppressing tendencies can lift up the neurosis from the ground. At this place is hidden the key to the amplification of the efficacy of our therapy. And on this account this place, as the last inmost zone of resistance, is the most difficult to occupy. It allows a glimpse into the most intimate unofficial headquarters of the *it* and of the responsible agency to that impulse which of necessity it must renounce. Its official headquarters are now known. The neurosis is felt as a disease from which the patient would now be freed. That this is not the most intimate viewpoint of the total personality is shown by the tenacity with which the symptom is retained.

I would like to illuminate these relations with a picture of political life, in which the relations of the individual psyche recur in a microscopic enlargement. The excesses, the illegal action of a party of extremists hostile to the government are not so interesting for the inner political criticism of a country

*Read before the IX International Psychoanalytic Congress, at Homburg, September 3, 1925.

as the question how such actions are possible with the official refusal of the responsible party leader. The suspicion of a secret understanding between the refractory members and the party rulers awakens, and only the unmasking of this secret teamwork can bring to a head the deepseated change in the relations.

Before I begin my discourse of accusation against the repressing agency in the rôle of neurosis genesis, I must endeavor to characterize it with the utmost truth. Our well founded knowledge of the process of repression allows me to be quite brief. With two criteria I have said the most important facts on the suppressing agency. This repressing is an unconscious process and hence its laws are likewise unconscious, deviating from the viewpoint of the conscious personality. We also know of conscious inhibitory processes and in contrast to unconscious repression we use such terms as condemnation, oppression, renunciation, etc. The difference between the laws of the repressing agency and the conscious ego come to expression most distinctly in that in general more is repressed than would come into consciousness. Think only of the most characteristic example, that of sexual repression. With incest endeavors the total sexuality, even that directed to the exogamous object, is clogged. The cause of this summary overrepression lies in the genesis of the repressing agency, the formation of which goes back to earliest youth and corresponds to the psychic relations of the child at that period. As the repressing instance gradually solidifies, becomes automatic and loses ever more the connection with the outer world, I have shown in my paper before the Salzburg Congress.

I named it an introjected code of past time which like every code is conservative. While the conscious ego develops itself further, makes itself free from sexual restrictions and also from infantile objects, the repression agency, especially the neurotically diseased, maintains the atmosphere of childhood against the sexual claims, still always with the old prohibitions, the old spirit, and thus rescues a fragment of the past.

From this character description of the repressing agency which in its nature is doubtless identical with the superego, we can yet derive no secret favor of the repressed tendencies. Its derivation from the Œdipus complex makes it indeed suspicious, although a former criminal may make a good police officer. We could hitherto at the most reproach the superego with a certain conservatism, although with no sordid secret motive favoring neurosis. From these characters can be derived at most an inhibited, overmoral character, although not the manifold symptoms of a neurosis with all its ways of suffering. And yet in these qualities the superego already contains the germ of a neurosis formation. This conservative overstrictness of the superego has burdensome internal political consequences for the soul.

When we observe the structure of a neurosis the connection strikes us that exists between selfpunishment tendencies and the condemned, ego foreign wishes. This connection is so apparent that it has been known from the first, even if the economic regularity hidden behind it was not yet grasped. One actually gets the impression that the symbolic or other disguise of a repressed tendency did not yet suffice that this, in the form of a symbol, was purged away, but it must at the same time correspond to the need of punishment. As a matter of fact we see that the symptom often has a double sense—a selfpunishing and an ego foreign, impulsive sense.

We know how to express it in the interest of simplicity that the symptom is just and superego just. In other cases the two opposed tendencies are subdivided into two or more connected and simultaneously existing symptoms. The scope of my address today does not permit me to go into details. I have in the Berlin Psychoanalytic Institute sought to present these relationships in a series of lectures on the individual forms of neurosis. Without adducing individual examples it suffices if I recall to you the structure of the compulsive neuroses or manic depressive conditions in which these relationships are most distinctly visible. I have compared the psyche of the compulsive neurotic with a certain merchant who carefully enters all his debts and claims and is mindful that both sides of his bookkeeping are always in equilibrium. So the compulsive neurotic takes care that the symptoms with masochistic selfpunishment content always holds the balance to the sadistic, ego foreign expressions. On the other hand he utilizes every plus in self punishment, in sufferings thereto in order to be able to discharge himself on the costs without punishment and sadistically. Often he compulsively makes the right hand make good for the criminality of the bad left hand.

Freud's comprehension of the connection between the manic and depressive periods is known to all. The terror of the superego, its rage against the ego proper, follows the revolutionary suspension of the manic period, the tyrants of the superego in the melancholic serve for the justification of the excesses in the mania.

In hysteria the expression of the need of punishment is not always so clear in the individual symptoms and still less so in the total behavior of the patient. We must not forget the chief criterion of the neurotic symptom that it indicates suffering. Suffering is the general denominator with which the claims of conscience are made equal, as Freud specified at the Berlin Congress.

This is the point from which the nature of the disease is first made intelligible. A neurosis is a disease and disease indicates suffering. We must not lose ourselves in the analysis of the individual symptoms and thereby forget the human being as a whole. This error we must leave to our colleagues the internists. Every expression of the female hysterical stands in the service of announcing suffering. Her entire noisy histrionics serve to reveal her suffering to her environment. And this officious announcement of her suffering is only the discharge of unconscious feelings of guilt. The greater the sense of guilt the graver must be the symptoms of suffering. And the more the hysterical suffers, the greater the claim she makes upon her entourage. She has reckoned up her duties with suffering, she has only more to demand. The preanalytic physician, like the naive entourage, has intuitively sensed this direction of the neurosis and named it an imaginary disease. This meant that the neurotic suffers with sufficient (more correctly without visible) cause, herself procures the disease.

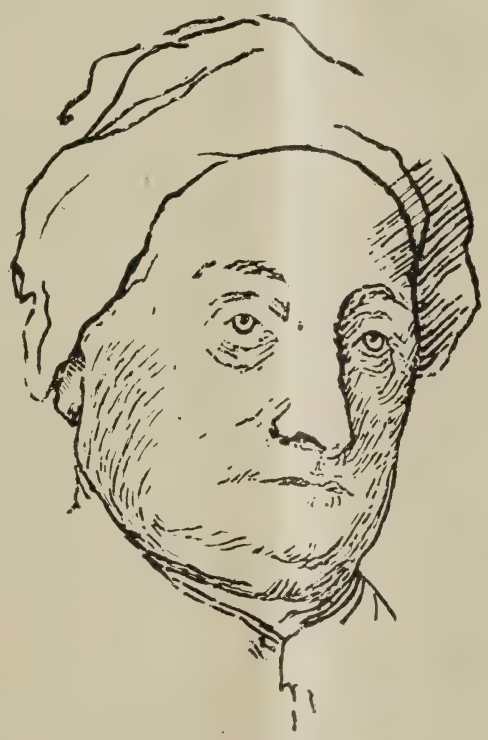
(*To be continued*)

Historical Medicine

Contributors to Medical Science

Hans Sloane

It has been said that in Great Britain, at any rate, the lives of three physicians, Sydenham, Sir Hans Sloane and Heberden, completely bridge over the uncertain period between old empiricism and modern medical science. The career of Sydenham has been sketched in this series and after the main incidents of Sloane's life have been narrated, the same service will be done for Heberden. Sloane, the seventh and youngest son of Alexander Sloane, receiver general of taxes for the County of Down, before and after the Civil War, and a commissioner of array, after the restoration of Charles II, was born at Killeleagh in 1660. An Irishman by birth and a Scotsman by descent, he exhibited in no ordinary degree the thrift, energy, pleasing manners and address of natives of these respective countries.



SIR HANS SLOANE

From the earliest years the bent of his genius was towards the knowledge of nature and this leaning was encouraged by education. He chose medicine as a profession and in order to gain a good knowledge of its several branches went to London. He studied assiduously anatomy, botany and chemistry. His aptitude for natural history brought him into touch with Boyle and Ray, to whom he communicated every curious or useful observation which he made. Having spent four years in London, he went to Paris, attended the hospitals, heard the lectures of Tournefort the botanist, of Du Verney the anatomist, and other eminent teachers. Having obtained letters of introduction from Tournefort, he went to Montpelier, and was introduced by M. Chirac, then chancellor and a professor at that university, to all the learned men of the province. He spent a year in collecting plants in the district and traveled through Languedoc with the same end in view.

In 1684 he returned to London, intending to settle there and follow his profession. He gave Ray a great variety of plants and seeds which Ray described in his *Historia Plantarum.* At about this time Sloane became acquainted with Sydenham, who took him into his house and introduced him to all his friends.

On January 21, 1685, he was elected a Fellow of the Royal Society and on April 12, 1687, he became a Fellow of the College of Physicians. But his tastes were rather in the direction of natural history than active medical practice, or he was averse from settling down, and he gladly accepted the offer of the Duke of Albemarle, then Governor of Jamaica, to accompany him there as personal physician. He remained in Jamaica fifteen months, and made a collection of the flora and fauna of the island. On the death of the Duke, Sloane came back to England with the Duchess, arriving in London in July, 1689. From that time on he remained in London, applied himself closely to his profession, and his professional career, social position, and scientific reputation became alike brilliant. In 1694 he was chosen physician of Christ's Hospital, a post he held up to 1730.

In 1693 he was elected secretary to the Royal Society and immediately revived the publication of *Philosophical Transactions,* which had not been issued for some time. He continued to be editor of them up to 1712, and the volumes, which were published during this period, contained many of his contributions. In 1701 he was made M.D. of Oxford University. In 1705 he was elected a Fellow of the College of Physicians of Edinburgh, and in 1708 he was made a Fellow of the Royal Academy of Sciences of Paris. Four years later he was elected a member of the Royal Society of Berlin. In 1719 he became president of the College of Physicians, and in 1727, on the death of Sir Isaac Newton, he became president of the Royal Society and was appointed physician to George II. In addition to these honors he won the distinction of being the first medical practitioner to be made a baronet. In 1742 Sloane left his residence in Bloomsbury and in the society of his library, museum and a select number of scientific friends spent the last years of his life at Chelsea, the manor of which parish he had purchased in 1722. He was then eighty.

It may be mentioned that in his youth he was extremely delicate, manifesting symptoms of tuberculosis, but by careful living he attained the age of ninety, without, as an old chronicler says, even feeling the infirmities of old age. After a short illness of three days, he died on January 11, 1752, in his ninety-first year. Although said to be extremely

penurious in his latter years, he was a liberal benefactor to the poor. He was a governor of every hospital in and about London, to each he gave a hundred pounds in his lifetime and at his death a more considerable sum. He sketched the plan of a dispensary, where the poor might be furnished with proper medicine at cost price. This plan, with the assistance of the College of Physicians, was afterwards carried into effect. He gave the company of the apothecaries the freedom of his botanical gardens in Chelsea. He did all in his power to forward the establishment of the colony in Georgia in 1732, of the Foundling Hospital in 1739, and drew up the plan for bringing up the children.

He was the first in England to introduce into general practice the use of Peruvian bark as cinchona was termed in those days, and in the words of a chronicle of the period used it "not only in fevers, but in a variety of other distempers, particularly in nervous disorders, in mortifications and in violent hemorrhages." But the fame of Sir Hans Sloane will rest mainly on his contributions to the knowledge of natural history. He was, perhaps, the greatest of English naturalists and his collection of natural specimens of every description was remarkable. He bequeathed these to the public, on the condition that the sum of £20,000 should be paid to his family, which sum, it is said, was not nearly half of the original cost, and scarcely more than the intrinsic value of the gold and silver medals, the ores and precious stones contained in the collection. There was also a library of more than fifty thousand volumes; 347 of which were illustrated with cuts, finely engraved and colored from nature. Three thousand five hundred and sixty-six manuscripts, and a very large number of rare and curious books. As said before, this museum and library passed into the hands of the nation for a comparatively small sum, and became the nucleus of the British Museum.

Pope, the greatest poet of the time in which Sir Hans Sloane lived, refers to Sloane in his moral essays:

> Tis strange the miser should his cares employ
> To gain those riches he can n'er enjoy;
> It is less strange the prodigal should waste
> His wealth, to purchase what he n'er can taste?
> Not for himself he sees, or hears, or eats,
> Artists must chuse his pictures, music, meats;
> He buys for Topham drawings and designs,
> For Pembroke statues, dirty gods, and coins;
> Rare monkish manuscripts for Hearne alone
> And books for Mead, and butterflies for Sloane.

J. Cordy Jeafferson in his interesting and amusing *Book About Doctors* tells this tale of Hans Sloane and Handel, the great composer:

"The most abstemious of eminent physicians was Sir Hans Sloane, the president of the Royal Society of the College of Physicians and the founder of the British Museum. A love of money, in his old age, made him a hater of all good things, except money and his museum. He gave up his winter soirées in Bloomsbury Square, in order to save his tea and bread and butter. At one of these scientific entertainments Handel offended the scientific baronet deeply by laying a buttered muffin on one of his books. "To be sure it was a gareless trick" said the composer in his broken English when telling the story. "but it tid no monsdrous mischief; pode it but the old poogvorm treadfully oud of sorts. I offered my best apologies, bud the old miser would not have done with it. If it had been a biscuit it would not have maddered; but muffin and pudder. And I have said, Ach, mine Gott that is the rub, it is the pudder! Now, mine worthy friend, Sir Hans Sloane, you have a nodable excuse, you may save your doast and pudder, and lay it to that unfeeling gormandizing German; and den I knows it will add something to your life by sparing your burse."

But if Sir Hans Sloane was in his old age inclined to somewhat extreme thriftiness it may be said that he "pinched and saved" in order that he might be magnificently generous publicly. As a scientist in an age when science was only beginning to emerge from the obscurity of ignorance he shone with bright light, and by founding the British Museum he not only was a benefactor to the British nation but to the entire world. Sloane will live as one of the great British scientific medical men.

John Locke, philosopher and physician, was a contemporary of Sir Hans Sloane, and that at one time he was in active practice is proved by one of the many letters which he wrote to the medical baronet.

"Dear Sir.

"I have a patient here sick of the fever at this season. It seems not violent; but I am told 'tis a sort that is not easily thrown off. I desire to know of you what your fevers in town are, and what methods you find most successful in them? I shall be obliged by your favor if you will give me a word or two by tomorrow's post, and direct it to me, to be left at Mr. Harrison's in the 'Crown' at Harlow. I am, Sir,

"Your most humble servant,
"John Locke."

Harvey, Sydenham, Locke, Sloane and Heberden were all of the same era. Harvey and Sydenham were contemporaries although Harvey was much the older. Sydenham, Locke, Sloane were contemporaries while Sloane and Heberden were contemporaries. These were all great medical men. Harvey and Sydenham were great pioneers, Sloane less so but more scientific than Sydenham, and Heberden, perhaps, in a lower category than Sloane. Locke was not known as a famous physician but was perhaps the first of English philosophers.

Femoral Hernia.—L. F. Watson (*American Journal of Surgery*, Vol. XXXIX, 12) concludes that the inguinal operation for femoral hernia has the following advantages over the femoral route: It gives a good view of the sac and contents; the constriction is quickly located and easily divided; an abnormal obturator artery is easily seen if present; there is more room to deal with the intestine, and resection or anastomosis, if necessary, can be carried out easily and without traction on the loops; and it also permits inspection of the intestine at a distance from the ring beyond the point of constriction.

One of the serious objections to the inguinal operation in strangulated hernia is the reduction of the more or less contaminated contents of the sac into the abdominal cavity. The inguinal incision opens Hesselbach's triangle, consequently there is always danger of a postoperative direct inguinal hernia, which is more difficult of cure than the original femoral hernia. The inguinal operation is more difficult and requires more time than operation by the femoral route. It is more troublesome in males, on account of the obstruction of the cord, than in females. In these subjects difficulty is usually encountered in suturing the conjoined tendon to Cooper's ligament.

Maimonides' Treatise on Poisons

LOUIS J. BRAGMAN, M.D.
Syracuse, N. Y.

(*Concluded from page* 107)

All the previously mentioned foods are very good also for the bite of a mad dog, with the exception of salt, of which only a little should be put in the food. The broth of young hens is specific, as well as good fowls such as turtle dove, partridge, and mountain hen; avoid young pigeons, however, for they are bad. Cabbage is especially good for dog bites, and also cooked or uncooked onions and garlic, or fish, particularly salted ones, but not, however, daily; broth of river crawfish is very good; but all the foods are nourishing and curative, each through the specific property which God gave it. Acorns are also of value, and cooked they prove to be a good food. Above all, the brains of cooked hens are mentioned as being specific for stings or poisons; they are as conducive to health as broth of turtle doves, which clears up the condition through its specific power. Lemon peels are especially useful against all poisons, above all leaves of lemon trees drunk as a decoction.

All doctors agree that the fumigation with ram's oil drives away all poisonous animals, and especially snakes. They likewise maintain that the fumigation with goat's nails, mustard, sulphur, nigella, or opium, or scalp hair, each taken separately, drives snakes and other poisonous animals away by means of the smoke; by the fumigation with all the substances taken together even the scorpion is driven away. One should therefore take the initiative with these things, and fumigate the locality in which poisonous animals are situated; for the advantage of human intelligence lies in the precaution, the saving, and the reassurance against all plagues, which are liable to attack the body; although there is no truer security than the foresight of God.

SECTION II. CHAPTER 1. PROTECTION FROM DEADLY POISONS

In the opinion of the writer it is fitting to insert here a statement regarding a matter recognized by physicists, but not generally by physicians; and if Galen makes reference to this matter, he does it only as it pertains to medical science; he does, however, refrain from explaining that general statement which I now have in view.

We know that all substances which are composed of elements possess color, taste, and odor; all these are undoubtedly accidental; yet it is not with color as with odor and taste. The color is an accident of the coloration, and the perception of this accident is the same for every observer without distinction, so that, for example, in reference to black, one type of person cannot perceive the form of black, and another the form of white, but its effect is necessarily the same for every observer. Taste and smell, however, are not of the same quality, for one substance can have the most extreme sweetness for one, and the most extreme bitterness for another; for one class it may be sweet and pleasant, and that is the conception of sweetness; another cannot stand it, and becomes unpleasantly affected by it, and that is the conception of bitterness, or acridity, according to physical laws. People are aware that cantharides is very bitter; on the other hand swine enjoy it, and people think consequently that it does them good. So it is with different kinds of odors; namely, for one species an odor may be pleasant smelling, for another evil smelling; here again the pleasantness of smell and taste depend upon the nature of the individual.

Furthermore, some plants may be nourishing for one species but poisonous for another, just as Galen mentions, and of which he quotes examples. According to these facts, I have observed that every plant or animal substance which smells sweet and pleasant, is undoubtedly a suitable food and can be relished with confidence. What, on the other hand, is bitter, pungent, sour, etc., like those things which are nauseating, we do not relish until we have been convinced of their nature; for there is a pungent plant which may be taken for wild radish, yet is really a deadly poison; similarly, there is a plant which resembles the mushroom, inclines to be black in color, and is poisonous. We tend to be cautious of these various kinds of bad odors and tastes, and against everything of whose nature we are unaware. We must also be careful of colored foodstuffs which are in common use, such as thick broths or those into which lemons have been put; others containing unusual color, as for example, foods in which sumac or pomegranate juice or fish sauce has been cooked, or in which a sour, or an astringent, or an insipidly sweet taste predominates, or foods with a strong odor like those prepared with vinegar, in which there are onions, or which are flavored with garlic. We should eat these foods when they are freshly prepared, and when they are reliable in that nothing strange can be detected in them; for the ability of harming by poisoning through food, is feasible only when the taste or odor or appearance is unchanged and unrecognizable.

This is impossible by means of meat or fowl, which is merely cooked in water, or roasted, for the least thing that happens here causes the taste, or the appearance, or the consistency, or the odor to change. Also, no deception can be practiced in the case of pure water, for one guards against drinking unprotected water, in that poisonous animals often drink therefrom, and cause harm by means of the poison which they leave behind; I have often seen and heard of such cases myself. However, he who believes that he can prepare a deadly poison which has neither a strange odor nor a bad taste, the color in which it is thrown does not change, nor the quality of the substance itself, on account of the minute quantity which he uses, which is none the less lethal, especially if it be put in water or chicken broth—such a person who believes that he can accomplish this is far from knowing the art of therapeutics; yet this idea has received general acceptance. In reality, all that is poisonous

and harmful, no matter what it is, will have a bad taste or odor in proportion to its nature; for harmful things, even in minute quantity, are bound to change the appearance of that into which they have been placed. The wisdom of protection against poisoning by foods lies therefore in eating food prepared only by trustworthy hands. It is easy to put poison into wine, for this is especially adapted thereto, since in this instance the change in color, odor, or taste cannot be detected. Whoever then takes some knowing that he may be poisoned thereby had lost his ability of discrimination.

It seems to me that bread cannot be used as an aid in deception, however, one does not take any from those whom he suspects of a fraud, but only from those in whom he firmly trusts. It is far fetched and difficult for an evil minded person to put a poison in a simple food or drink, but with complex foods and drinks the trickery may succeed; if such an occurrence happens, while it may not kill, it can cause severe harm, and the deliverance therefrom rests in the hand of God.

CHAPTER 2. GENERAL RULES FOR THOSE WHO HAVE EITHER TAKEN OR BELIEVE THEY HAVE TAKEN POISON

Whoever has taken a deadly poison or fears that he has done so, must first induce vomiting by taking hot water in which anethum is warmed and into which much oil has been poured; the mixture will purify the stomach; after this a quantity of fresh milk must be taken, then immediately vomited; then after a while some butter and honey must be taken and vomited. It is said that chicken dung, by inducing vomiting, has a remarkable power of eliminating the poison; take two drams of it in hot water. Then eat the foods which have been mentioned with much bread and butter and honey; if the food has been digested in the stomach, it will induce vomiting, for oil, milk, and fat break up the malignity of the poison and protect the body thereby. After this one takes the remedies which are especially adapted for poisons, the simple or combined ones, depending on what is on hand; and if the substance has not left the stomach within eight hours, as was mentioned in the case of the bitten person, then the patient takes the foods detailed in the sixth chapter, observing the same regime, and preventing him from falling asleep, as mentioned, until his food is digested. If he is observed to improve, he can be allowed to sleep, and the same nourishment can be continued for two or three days, then he can be given one of the effective remedies, simple or combined. If the medicine had left the stomach, feed him young hen or cock, until he returns to normal. If in spite of all your prescriptions severe pain occurs in the stomach, or smarting, or diarrhea, then there are different remedies for this and for other complications which may make headway, but such are not to the purpose of this treatise.

CHAPTER 3. SIMPLE AND COMBINED REMEDIES FOR THOSE WHO HAVE TAKEN AN ESPECIALLY DEADLY POISON

Those simple or combined remedies which possess the specific power to counteract all poisons, without distinction, are called, in a phrase: "those remedies which are essentially useful for poisons," or life-savers, or also, bezoar, which is a Persian word. The best of all the combined remedies which help against deadly poisons is, as is well known, the large theriac, the mithriadic, then comes the theriac of four ingredients, under the simple term emerald, which is so well for those who have taken poison or have been bitten; it is a theriac which also possesses the specific power of strengthening the heart, if it is taken by mouth, and helps for the pain of the stomachache if it is applied over the stomach. Ibn Zohr mentions all these in his *Experiences,* and confirms them copiously; he was the greatest man to prove the value of these remedies, and the one who occupied himself mostly with them, and also the one who had the greatest talent in this regard on account of his great affluence and erudition in the art of therapeutics. All his scholars and associates who came to me told me that he never let himself be without a gold vessel containing the great theriac with a piece of emerald, for he was extremely apprehensive of being harmed by deadly poisons.

After the emerald comes the animal bezoar, then the essrog seeds, all of which have been already mentioned, as to dosage and method of taking. Other simple remedies are: silvestrene, two drams in wine; seeds of red silvestrene, or hydrangea, one siclus in wine. Also any kind of mentastrum one has on hand. If it is fresh, warm one ounce in one half litre of wine; if dry, powder and sift and take three drams in wine. Also all kinds of tripe, especially hare's, one half to one and one half drams, in a swallow of sour wine; these are antagonistic to all poisons. All are easily found and of great benefit.

CHAPTER 4. RULES FOR THOSE WHO KNOW WHAT THEY HAVE TAKEN

I have already remarked that I would mention those things that can easily be taken without the nature of their substance being known, that is, with which one can be easily deceived. To this group belongs ox blood, one of the deadly poisons, and one with which one can be easily deceived, if it is used to thicken a dish, or with cakes prepared from meat; it is a deadly poison. If one recognizes the poison as ox blood, vomit the food taken by means of tripe and warm sour wine, then vomit again by means of saltpeter and sour wine, then take kharub seeds, two drams, asafoetida, and borax, one dram. Take the latter as a powder with sour wine; if vomiting follows, it is just as well; if it remains in the stomach and passes through the bowels, it is even so just as good, and is restorative. Then eat one of the mentioned foods, avoiding those contraindicated in the previous chapter.

In the opinion of the writer, if the skilled physician considers the rules regarding the poison which is especially harmful and deceptive, he will not find the treatment difficult or embarrassing, particularly in reference to the mineral poisons, as martik, verdigris, and arsenic; if the odor of the poison is not easily recognized, then the color of the food will not be changed; and in addition, these poisons are very deadly. On the other hand, there are plant poisons, such as opium, which do not change the color, yet change the odor in a great degree. Others change neither odor nor appearance, as the milk (or fat) of lovage, and juice

of anacardium; but a few of them alter the taste recognizably. In connection with this feature, doctors find men in certain countries whose wives deceive them by means of a food, so that they die in a day or two, but what is worse than death, are sometimes afflicted with a suppurating leprosy; the prepared food causing the flesh to fall off. I have found many men in every city that I have visited who have encountered this, but the details which I have heard from others are more than can be mentioned here. I tell what the doctors themselves and their preceptors report: that they have investigated the circumstances with unusual pains, until they have learned that the food with which the wives deceived their husbands, was prepared with menstrual blood. They take the blood in the beginning of the period, even though it should be scant, and throw it into the food, and the suffering results. This, however, is not mentioned in the books which I have read, so that they do not contain a chapter for its cure. But those doctors have told me that they have saved many men from suffering, especially in the onset of the condition, by the above mentioned emetics, and have cured them with these simple and combined remedies, namely, borax, tripe, saltpeter, kharub seeds, fig tree ash, extract of mulberry leaves, drunk simply or together, according to the age. I have no experience in the matter; I hold myself obliged to mention only what I know of it, so that the information may be made known to others, and each may try what he sees fit.

It is advisable further, that he who wants to protect himself from all suspicious foods refrain from eating the foods himself, until a great proportion has been eaten by another, and it is not sufficient that it merely be swallowed, as I have seen the king's cook do in his presence.

One can also be deceived with schukran and bendsch; these are a species of hyocyamus. If one is cognizant of having taken some, heat the bark of the mulberry tree in vinegar, and take as an emetic, then take milk, and go through the procedures mentioned above.

Datura metel (stramonium), a sort of hermodactyl, is extremely poisonous in the weight of one siclus; but the cold Indian nut is much more so; it is said that it kills in a half a day with cold perspiration and cold breath; it is a poison which is commonly found, and with which one can easily be deceived, for it changes neither the taste nor the odor, hence is highly unnoticeable. If one is aware he has taken some, then saltpeter must promptly be taken as an emetic, and warm water and oil; then much butter, and much wine in which pepper and spices have been put.

Mandragin can be sucked out of a wound without harm; but its shell and grain are harmful. I have seen many women and children partake the same unknowingly with the customary symptoms of redness and swelling of the body, itching, and a sort of intoxication. Treatment is the same as for datura metel.

It is above all easy to be deceived with cantharides, but this can be recognized by the injury to the bladder and the hematuria, with stinging pain and evacuations, and death after a number of days. The cure is found in the second chapter of this section, which mentions the usual emetics, continuously drinking decoction of dry figs; then drink the juice of sileos and of purslane with sugar water and continue with the treatment until the inflammation subsides; finally, take as nourishment milk with bread and butter, as mentioned in the sixth chapter of the first section.

One may sometimes eat sponges and mushrooms, not recognizing the nature of the species; both of these are very harmful, and yet are eaten abundantly in the East and West. There is a deadly species of each, namely, the kind that is black or green or malodorous. But even the harmless kind may, on continuous eating, cause an angina, leading to death, or severe colic. Whoever eats this species, therefore, must add pepper and salt thereto, and much undiluted wine must be taken with it. If the deadly species is eaten, as soon as symptoms appear take a broth of goat's cheese in the proportion of one ounce to two drams, Indian salt, one half dram, and after they have been in the stomach a while, vomit them. Then drink oxymel with extract of radish leaves, and vomit; then drink small quantities of undiluted wine. Another source of accident of diet is a special kind of solanum (nightshade); the extract of which is often mentioned among those substances which are used in the diseases of the internal organs. The dark seeds of the black species are gathered; if these are taken in the form of a drink, severe angina immediately follows, then staggering, and hemoptysis; the cure consists of the aforementioned emetics, with the subsequent vomiting with water and honey; this latter is repeated almost constantly, until improvement.

This finishes what your servant considers sufficient according to the commission assigned to him; perhaps it will prove to be satisfactory; with the help of God, amen.

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Harvey's Philosophy of Life.—Among the rules for guidance in his lectures: "No. 6, Not to praise or dispraise other anatomists, for all did well, and there was some excuse even for those who are in error." He appears to have been ever happy in his work and cheerful even in his retirement at the end of life. He tells us that he found a solace in his studies, in the distracted period of the Commonwealth, and his retirement from public life proved to him "a sovereign remedy." (*English Physicians of the Past.*)

Calcium Chloride as a Diuretic and Its Influence Upon the Circulatory Mechanism.—Harold N. Segall and Paul D. White (*American Journal of the Medical Sciences,* November, 1925) say that in cases of cardiac failure with edema in which constant rest in bed, digitalization, and the administration of various diuretics have not resulted in a satisfactory diuresis, calcium chloride may be employed as a diuretic. No deleterious effects were observed from the oral administration of calcium chloride, ten to fifteen gm. a day, in any of the cases studied.

Editorial Articles

OUR EMERGENCY APPARATUS

Dr. H. B. Richardson describes, in the *Journal of Biological Chemistry,* some interesting studies of a case of congenital absence of sweat glands in a boy. The child got along very well without this apparatus except that he could not play as he wished during hot weather, though he had learned to make up for Nature's omission, on occasion, by wetting his shirt. The water vapor given off at rest was of normal amount and sufficient for ordinary loss of heat.

Various good offices for health have been attributed to sweating and, even when details of results are omitted, we are often urged to exercise daily to such a degree that the sweat glands will be brought into action. The inference is, either that our exercise should be sufficiently violent to bring this about in any season, or that we are purified by the elimination process. Of course it has long been known that the sweat glands were not essential organs of secretion, nor has there been any ground for the assertion that we need to exercise in so violent a fashion.

The sweating glands, as Dr. Richardson says, have been developed to supplement the ordinary evacuation of water through the skin and they constitute an emergency apparatus which becomes progressively less essential as conditions of life and survival become easier. The "sweat of our brows" is not necessary for the earning of a livelihood by a very large percentage of mankind.

If the exercise of the sweating apparatus is nonessential for health and longevity, we are not so certain that the exercise of the muscular system also is as essential as many persons suppose. For most this bulky machinery is now neither necessary, as it was with out ancestors, for escape from enemies nor for pursuit of food. There are many muscles which are barely used save in the pursuit of athletic pleasures and most of them are rarely brought to full development or action after our youthful days. In a word, it is highly questionable whether for health we need to exercise more than we are naturally inclined any more than we need to work our sweat glands systematically.

There is vastly more lung than most of us need to use at any time and there is no proof that we are actually the better for systematic deep breathing, at least so far as the lungs are concerned.

There are other physiological apparatus which also are intended for emergency purposes. The digestive system is capable of double the capacity of work in the active that is needful in persons at rest, and the liver and the kidneys are similarly built on the emergency plan. Unfortunately, these food handling mechanisms seem to be much more often used to excess and without need than are the muscles, lungs or sweat glands. Whether emergency use of these functions in ordinary conditions of life conduces to a harmful outcome we cannot say, though such might be expected to be the case, for in our distant ancestors feasts were not followed by feasts but by fasts and even in times of abundance there were neither cooking nor condiments to provoke to intake in excess of necessity. When it was needful that there should be abundant muscular work, the large alimentary activity was in evident harmony with the energy requirements, but for the modern sedentary person there is likely to be entirely too much stoking for the work the machine is to accomplish. It is no trouble at all for most of us to use the muscular, the respiratory, and the heat eliminating machinery with economy, but when it comes to the food handling apparatus there is another story and a story which does not seem to fit in with hygiene. Our feeding and food should be adjusted to body needs and if our hunger were consulted such would doubtless easily be the case, but when our it-tastes-so-good appetites hold sway (as they usually do) there is certainly lack of adjustment, to say the least on the subject. To take excess food and try to compensate for this by muscular exercise does not seem either a logical or physiologically economic procedure.

CANCER AND ITS TREATMENT

Several books concerning cancer have been published recently, some of them of a popular character. One of the latest and one of the most authoritative is by Dr. Charles P. Childe, Methuen and Co., Ltd., London, consulting surgeon, Royal Portsmouth Hospital and expresident of the British Medical Association. It is a practical book in which the author takes the view generally accepted that the only chance for successful treatment is early diagnosis and prompt surgical measures.

It is pointed out that cancer has no characteristic symptoms and that consequently the disease, especially in its earliest stages, cannot be diagnosed with certainty except by microscopic examination after operation. But he tells of the various danger signals that should make us suspicious of the coming of cancer and urges the public to consult a medical man as soon as such symptoms exhibit themselves. However, perhaps the main interest of this

book lies in Dr. Childe's views as to the causation of cancer. He holds that cancer has no relationship with diet and that chronic constipation or intestinal stasis is a negligible factor in its causation. In fact, in his opinion it is a local disease. Yet he voices the belief that while it is not a constitutional disease, it is a disease of civilization.

Mr. H. W. S. Wright, Kegan Paul, French Trubner and Co., London, E. P. Dutton and Co., New York, discourses on the conquest of cancer, which he deems feasible if an early diagnosis is made and operative methods done in time. He believes, with the majority, that chronic irritation is one, if not the most fertile, cause of cancer and advises that a persistent pimple or a small ulcer be excised without delay. Mr. Wright scoffs somewhat at intestinal stasis as a probable cause of cancer. On the other hand Dr. Leonard Williams, writing on *Middle Age and Old Age,* Humphrey Milford, Oxford University Press, stigmatizes intestinal stasis as the greatest enemy of civilization and he wholeheartedly agrees with those who state that cancer is a disease of civilization and that intestinal stasis brought about by overeating and unsuitable food is chiefly responsible for the prevalence of cancer.

There is practically universal agreement among members of the medical profession that, at present, the only effective means of treating cancer successfully known is by surgical measures undertaken in the early stages, in some instances greatly aided by irradiation. If cancer is a constitutional disease, and the testimony in this direction is stronger than in the direction of being of local origin, then the evidence in support of intestinal stasis as a cause cannot be overlooked. Chronic intestinal stasis will provide both foci of irritation and a suitable soil. Also if cancer is a disease of civilization as Dr. Childe thinks is probable, the constitutional theory of causation leads itself to the view more than to the local theory of origin. Those who are of the opinion that gastrointestinal troubles play a considerable part in causing cancer, teach that it is likely that the disease may be prevented by careful diet and mode of living generally.

As an example of the varying views which prevail with regard to cancer, the experiences of noted surgeons may be cited. Mr. James Sherren, surgeon to the London Hospital, in an address given before the Interstate Postgraduate Assembly of America held recently in London, stated that he had never seen carcinoma develop after gastrojejunostomy for a small mobile ulcer on the lesser curvature, although it was true that in at least a quarter of cancerous stomachs evidence of preceding simple ulcer could be found. Dr. Charles Mayo has recorded views of a similar kind.

Dr. J. H. Dible in the *British Journal of Surgery,* 1925, xii, 666, gives the results of an inquiry on the subject instituted by the Manchester Pathological Society. The conclusion arrived at was that transformation of a chronic gastric ulcer into a carcinoma is a possible but rare occurrence. Dr. H. Finsterer, *Wien. Klin. Woch.,* 1925, xxxviii, 295 and 321, holds directly opposite views. So strongly he believes that simple gastric ulcer may develop into carcinoma, that as the outcome of his long experience he thinks that wide resection in simple gastric ulcer is to be regarded as a prophylactic method against the occurrence of malignant disease. The situation with regard to cancer seems to be that early diagnosis and prompt operative measures coupled with the use in many cases of radium or x ray therapy are the only effective means of treating cancer.

It is possible, too, that preventive methods, dietetic and otherwise, may keep off cancer, by avoiding the establishment in the body of foci of irritation and by devitalizing the system and so decreasing the powers of resistance. Are certain persons more prone to malignant disease than others, and is there, to some extent, a cancer diathesis? At any rate, the advice to consult a physician when suspicious symptoms arise should be followed always. The public require more information from the doctor as to exactly what these suspicious symptoms are.

PREDISPOSING CAUSES OF RHEUMATISM

Tradition has it that rheumatism is a cosmotelluric disorder. In other words cosmic factors such as rainfall, humidity, variations in temperature and barometric pressure, diminished ionization of the air and so on combined with telluric conditions, notably soil dampness, play an undoubted if ill understood rôle in producing acute and chronic rheumatic disorders.

Miller discussing cosmic or climatic conditions dismisses them with the trite observation that damp and cold indisputably account largely for the prevalence of rheumatism in the British Isles. The influence of cosmic forces on the organism, we think, merits something more than an almost flippant allusion thereto. Are we to rest satisfied with the mere statement that damp and cold predispose to rheumatism—as if forsooth the pronouncement were selfexplanatory and final! Are cold and damp the only cosmic factors concerned? May not lack or excess of sunshine play a part not to speak of barometric variation or changes in ionization and other conditions?

The laborious researches of Haldane, Barcroft and other physiologists must assuredly have fallen on stony ground, otherwise some reference would have been forthcoming as to the truly profound influence exerted by variations in temperature, humidity, and barometric pressure on the vital processes of tissue oxygenation. For, all these factors raise or lower the dissociation curve of oxyhemoglobin and this minute by minute in strict accord with the fluctuating need of the tissues for oxygen. The absence of any

reference to these well ascertained physiological findings is the more inexplicable in that it possibly explains why the English climate is so provocative of rheumatism. This we suggest because its salient characteristic is its variableness, its erratic changes in temperature, humidity, pressure, all throwing strain upon the physiological powers of adaptation, i. e., of tissue oxygenation. This was well described by Llewellyn in his presidential address on The Rheumatic Diatheses. As he rightly observes, if the problem of rheumatism is ever to be solved we must envisage the rheumatic subject, young or old "as an organic unity under the play of cosmic forces, as a living being whose life is but a fragment of the total life of the universe." Had the farreaching effects of cosmic variations on tissue oxidation been duly considered, as they undoubtedly ought, when discussing the predisposing influence of climatic conditions, we venture to think that certain rash conclusions would have been modified. Thus Miller observes "It would appear that the proximity to water, the subsoil, and the altitude of the site have all some predisposing power towards rheumatic infection, but it is very necessary that their importance should not be overemphasized. If there is anything in the connection between damp homes and rheumatic infection, it is the dampness of the home itself which is primarily of importance. Its site is only of secondary importance as tending towards a damp home. That it is perfectly possible to live in a lowlying district close to water without the slightest fear of rheumatic infection is proved beyond criticism by the experience at Eton and Beaumont Colleges. Both these lie close to the Thames and between them account for some 1,350 boys, and yet I am told by Dr. Atlee that he has seen only one case of rheumatic fever at Eton in seventeen years, and Dr. O'Ferrall no single case in eight years."

Rheumatic subjects may well take heart of grace. Even though they live, so to speak, in a swamp, they shall be immune not only from rheumatism but even from the fear thereof, provided their house be dry.

If a dry house be the one thing necessary to salvation, then apparently the mystery of how to prevent rheumatism is solved. But what becomes of Dr. Miller's previously expressed faith in the potency of climatic conditions? Does a dry house immunize the dweller therein not only from rheumatism, but from the effects of climate also? Again why attach primary importance to a dry house and but secondary importance to proximity to water, subsoil and altitude? For if we eliminate defective roofing, and pervious walls to what can the dampness of a house be attributable, if not to site or soil dampness? The wise man has from time immemorial built his house upon a rock and despite Miller's dictum will, we venture to think, continue to do so. For, in truth "the floods came and beat" upon no few of the houses in which Miller and his colleagues found the majority of their rheumatic cases. In Marylebone subterranean rivers and in Paddington canals abound, while Bath and Bristol are traversed by canals and rivers and in Birmingham "the great majority of the cases occurred along the southern banks of the two streams which flowed through the town" and in which the streets "are periodically flooded." Again the subsoil in these various regions were dominantly clay, river bed, alluvial or gravel and in respect of the last named we are told that in Bath "the gravel in the majority of these cases is in an area adjacent to the river bed and used to be flooded."

As to alfitude we are told that the London cases almost all dwell in lowlying areas, and much the same is true of Bristol and Bath, and yet in the next paragraph we are cautioned not to overemphasize the importance of proximity to water, subsoil and altitude. We venture to think that Miller's evidence overwhelmingly points to the above factors being of primary importance and dryness of the house of secondary valency.

The *British Medical Journal* in an editorial expresses a pious hope that the public health authorities will see to it that "the new houses of the people will be in this respect (dampness) an improvement on the old." Nevertheless, we doubt if the Ministry will share Miller's relative indifference as to the site, subsoil or altitude of the houses they may elect to build. Dr. Miller holds that "industrialization" is a "powerful predisposing factor" and we recall the following data drawn from the Health Ministry's invaluable report on the "incidence of rheumatic diseases." It reveals that of English counties the incidence and death rate from acute rheumatism and cardiac rheumatism is highest in Lancashire—an industrial region. Nevertheless, the incidence and mortality from these same disorders is higher still in Montgomeryshire, an agricultural county in Wales. Again "social status," he says, is a powerful predisposing factor. Truly a novel doctrine. Since when, may we ask, have rheumatic streptococci been influenced in their choice of victims by their status, high or low, in the social hierarchy. Somewhat of a strain, this, upon our powers of orientation but Miller is a pitiless iconoclast with no bowels of compassion. Nothing is sacred not even the germ plasm, usually held inviolate. For lo and behold we are told in respect of rheumatism that "the importance of heredity is more apparent than real; its frequency is largely a matter of home environment." Small wonder that in the next sentence he hastens to tell us with truly "damnable iteration" that "it is the state of the house rather than its site which is important." Truly the lot of the builder is hard but what of the social welfare worker, when he realizes that "home environment" determines the frequency of an hereditary predisposition to rheumatism.

The purpose of the research was to inquire into "rheumatic heart disease in children," its prevention being the prime objective. But in Miller's Report on the Environmental and Other Predisposing Causes of Rheumatic Infection, we look in vain for any light on the factors that especially favor or produce heart disease in childhood. Heredity goes by the board despite the fact that in both the Bath and Bristol cases it figured strikingly. Again the influence of malnutrition we are told is undoubted though "its action, taken alone, is probably not a potent one." Again in discussing nutrition and diet surely some mention should have been made of the tendency of these children to acidosis, cyclical vomiting, mucous colitis, etc. As to the old view that "there was some metabolic predisposition towards rheumatism in certain individuals or families," Miller observes "applied to the definitely infective rheumatism of children I

see no room for the theory." We have yet to learn that the rheumatism of childhood is definitely infective. Pontifical statements of this sort, even when reiterated *ad nauseum* are merely statements and not demonstrations. Again we are told that "the key to the rheumatic problem would be in our hands if we knew why the disease in its definite forms is one of hospital as opposed to private practice." This *ex cathedra* pronouncement is far too dogmatic. If accepted it will retard rather than advance our knowledge and we disagree wholly that its elucidation will prove to be the open sesame we all hope for. All that experience justifies us in claiming is that rheumatism, cardiac or other, is more common in the children of the poor than of those more happily situated. Were acute rheumatism and cardiac rheumatism, as they should have long since been, among the list of notifiable diseases, this opinion as to class distinction would never have been voiced, much less have been exalted as an axiom for our guidance in further research. To sum up, the investigations, far from shedding light, do but accentuate our ignorance of the environmental and predisposing causes of rheumatism.

Dr. Miller's report will be fortunate if it escapes the obvious criticism "What is new is not true and what is true is not new."

Obituary.

SIR FREDERICK MOTT, F.R.C.P. LOND., LL.D. EDIN.

London

Death has been busy recently in the ranks of the British medical profession. Within the space of a few weeks several well known leaders of the profession have passed away. Stephen Paget, John Williams, Caultie and Leishmann and now Frederick Mott, who died on June 8th, in Birmingham General Hospital at the age of seventy-two. He had a seizure while traveling in the train from London to Birmingham a few days ago.

Mott was undoubtedly one of the makers of modern medicine and gave to the study of mental diseases a new aspect. He insisted that many mental disorders had a physical basis, a view which a large number of alienists and neurologists now hold. Mott saw insanity, or many forms of mental aberration, not as a disease of the soul or mind, but as a disease of the body. He believed, in short, that given a sound body, as a rule, a sound mind would be housed therein. Of course, this view is not new, but Mott not only voiced this opinion; he set to work to prove it.

In this endeavor he was remarkably successful. He showed that general paralysis was syphilis of the brain. This was a most important discovery. "G. P. I.," before the time of Mott, represented a classical disorder of the mind characterized by symptoms of delusions of grandeur and so on, and had been studied intensively for generations. Mott's monumental investigations removed this malady from the mental to the physical sphere, and although this view has been attacked from various quarters, it has withstood the acid test of experience and is now generally accepted. Further testimony of the physical basis of general paralysis of the insane has been afforded by its successful treatment in some instances by the artificial induction of malarial fever.

Mott next took up the study of dementia precox. However, the war interrupting this study, he turned his attention to solving the problem of "shell shock" and threw much light upon this subject.

Mott was a pathologist of the very first rank and was honored as such in every civilized country. Most of his best work was done as pathologist to the London County Asylums, where he had access to a wealth of material. In this post he was associated with another great neurologist, the late Mr. Maudsley, and Mott was active in instituting the Maudsley Hospital in South London as a memorial to that great man.

Mott was born in Brighton in 1853 and educated at University College. He was associated with the late Sir Victor Horsley in certain brain researches. He was consulting physician to Charing Cross Hospital and when he retired from his London post he became associated with research work in Birmingham. The *London Times* of June 9th, in an appreciative memoir of Mott, says, "No kinder or more gentle man ever lived."

DR. LILIAS HAMILTON

Kabul

A truly remarkable woman died a short time ago in Nice in the person of Dr. Lilias Hamilton. She was an extremely good physician and of great personality who passed an adventurous life such as falls to the lot of few men and still fewer women.

Dr. Hamilton was a student of the London School of Medicine for Women, taking her degrees in medicine in London and Brussels in 1890. She first built up a large practice in Calcutta and when the offer of the post of Court Physician to the Amir of Afghanistan, Abdul Rhaman, came, the Indian Government told her plainly that if she went she did so entirely at her own risk. Although her health was by no means good at the time, she decided to take the risk. However, she quickly justified the choice that had been made, was a great success as Court Physician, and opened a hospital at Kabul, to which came all sorts and conditions belonging to the wild tribes of the frontier and the border. As may be well imagined in dealing with the Amir great tact and good judgment had to be observed.

On her return to England she worked for a time at the Liverpool Settlement among the poor, and in 1908 went as Warden to the Studley College of Agriculture and Horticulture for Women, of which she made a great success. She had visited South Africa and had realized something of the possibilities of land for girls. Up to last year she remained there as principal, although during the epidemic of typhus in Serbia early in the war, she went to do what she could for the suffering people. She died in Nice somewhat unexpectedly after a very full and varied life in which she proved once more not only the worth of the medical woman but that she can undergo hardships with as high a spirit as man.

The Harvard Medical School and the Region Round About It

History of the Harvard Medical School

F. C. SHATTUCK, M.D.

Boston, Mass.

The history of the Harvard Medical School, its foundation and growth, may serve to illustrate the history of medical education in this country, although the University of Pennsylvania, 1765, and the University of New York, 1768, are elder sisters.

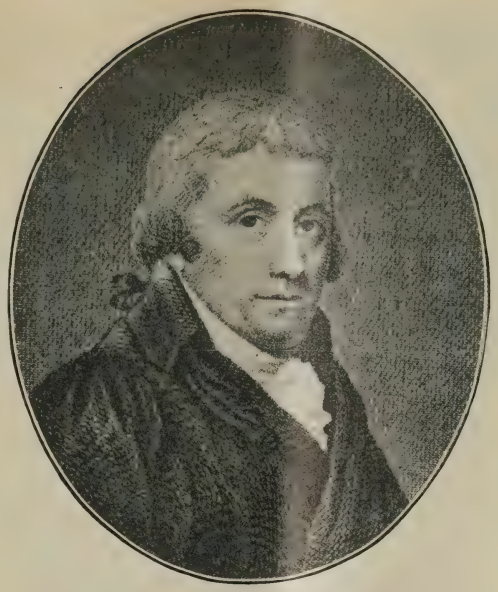
In the century and a half which elapsed between the Virginia settlement and the first medical school an official qualification for practice was held only by the few immigrants who brought it with them, and those Americans who could afford to seek it in England or Europe. The avenue to practice was through apprenticeship, which often turned out practical, resourceful men, ready to deal with anything coming along. They were not spoon fed. Some preceptors did much for their pupils, others less. I have heard one pupil quoted as saying of his preceptor, a leading Boston medico,—"All he ever did for me was first to hand over Booerhave's works in ten volumes, and then, after reading these, Van Swieten's Commentaries thereon in twelve volumes." On the other hand, a Harvard A. B. of 1765, a student of Dr. Oliver Prescott, of Groton, a country practitioner, won a place in Thacher's Medical Biography. As the country grew, so did advanced education. Travel was difficult and costly, and New England felt the need of a school of medicine all her own, naturally in connection with her chief institution of learning and near her largest city.

The Massachusetts Medical Society was incorporated in 1781 with thirty-one members, of whom twenty-three were Harvard graduates—men of preliminary training.

PERIOD I.—THE FOUNDING—1783-1811

In 1783 the Harvard Medical School was born, with three professors, Aaron Dexter, John Warren, and Benjamin Waterhouse. The two former were Harvard A. B.'s. The latter, throughout the Revolutionary War, studied three years in Great Britain under the direction of John Fothergill, his mother's uncle, and then four years in Leyden, where he took his degree, returning in 1782. Waterhouse's chief distinction is that he, in July, 1800, first in this country, vaccinated his son, five years old, for smallpox. Incidentally, it may be added that Zabdiel Boylston, of Boston, in 1721, first in America, inoculated for smallpox his son of thirteen, and two negro servants. The suggestion came from Cotton Mather, but for the backing of whom and other clergymen it probably would have gone hard with Boylston, so strong was popular feeling against such an experiment.

The lectures were given in Cambridge in quarters loaned by the College, largely to undergraduates, and it was five years before the degree of Bachelor of Medicine was first given to two men. The M. D. degree was not given until 1811. From 1788 to 1810 fifty-seven degrees of M. B. were given to men, forty-one of whom had previously received a degree in arts. This is interesting as indicating that the appeal to medicine was more limited to trained men than it afterwards became, when in recent times leading schools, as a means of raising standards at whatever risk of limiting numbers and revenue, one after another made the B. A. degree or its equivalent a requisite for admission. It was a day of small things —but pregnant.

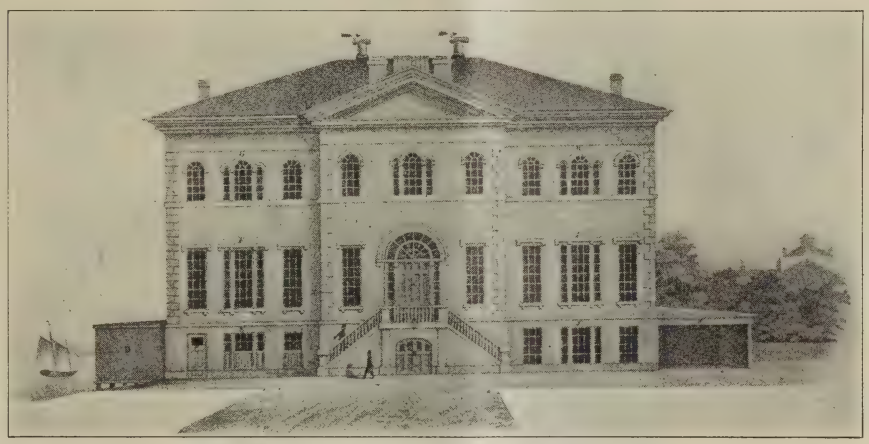


BENJAMIN WATERHOUSE

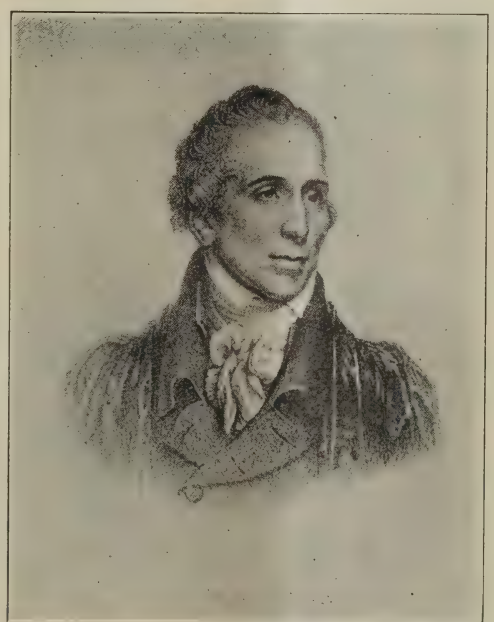
PERIOD II.—1811-1869

Our second period opens with the removal of the Medical School from Cambridge to Boston in 1811. It was a period of slow but steady growth, as real though not as spectacular as that of the country in extent, wealth and population. In the years 1788 to 1813 only twice was the maximum of five annual graduates reached. From 1813 to '25 the teens prevailed. From '25 to '37, the twenties. In '47 and '48 there was a gain into the forties, not reached again until 1860. Then came the fifties and sixties, and in '66 an even hundred graduated, the maximum of this period, and not equalled or surpassed until 1894.

The gain in methods, clinical teaching and size of the teaching body was greater than that of the student body. For the Harvard school did not long have a monopoly in New England. Nathan Smith, a giant of American medicine, Harvard M. B. 1790, as sole professor founded the Dartmouth school in 1798; that of Yale in 1812, of Bowdoin in 1821, and lectured at the University of Vermont 1822 to '25. Verily, there was no racial or other suicide about him. He left four sons and a daughter, all the former men of medicine. Until well into the latter half of the last century the Harvard School had a fair number of Canadians, especially from Nova Scotia and New Brunswick. These fell off as home conditions improved and Harvard standards were raised. Other competitors arose. It is a truism that there is no such way to learn as to try to teach others. The Berkshire School at Pittsfield was incorporated in 1823 under the jurisdiction of Williams College. Cheap living and good teaching soon attracted students to a number about equal to those of Harvard. Among the teachers Alonzo Clark, O. W. Holmes, Willard Parker, Elisha Bartlett and Gilman Kimball may be mentioned. After 1845 it gradually declined from lack of clinical advantages and other causes, and its last catalogue was issued in 1867.

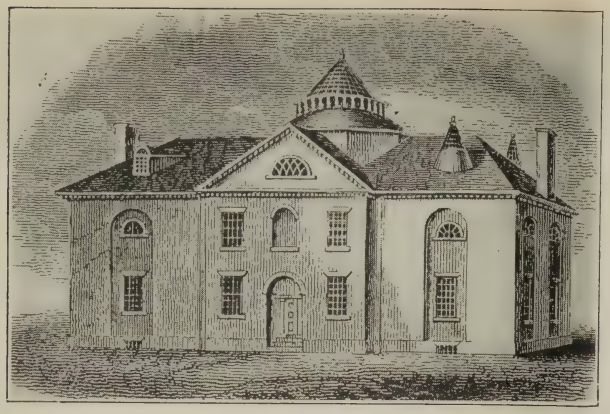


Massachusetts Medical College, Erected 1846



JOHN WARREN

Private schools also arose in Boston, chief of them the Tremont, '38, and the Boylston, '47. The underlying cause for their existence was doubtless the short lecture term of the Harvard School and a gradual drifting away from the preceptor system. The teachers were Harvard graduates or even Harvard teachers. These schools, extramural in part, filled time between the lecture terms of the Harvard Medical. They admirably served their purpose, and were finally given



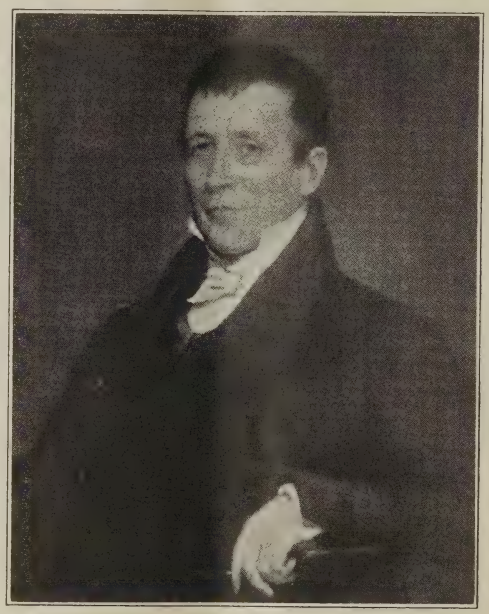
Massachusetts Medical College, Erected 1815

up or partly merged with the more powerfully backed Harvard. For the interesting details of the story space here lacks.

Among the professors of this period were John C. Warren, James Jackson, O. W. Holmes, the brothers Jeffries and Morrill Wyman, Jacob and Henry J. Bigelow, father and son; J. B. S. Jackson, Henry I. Bowditch, George C. Shattuck, Edward H. Clarke, David W. Cheever and Calvin Ellis. Some of these held over into the next period.

An outstanding event of this period was the first major operation under ether, at the Massachusetts General Hospital by John C. Warren in 1846.

Until 1816 the School had no habitation of its own. Then was built and opened, with State aid, a centrally located home in Mason Street, which gave place in '47 to the North Grove Street building, much larger and adjoining the Massachusetts Hospital. The School seems to move about once in a generation. It is to be hoped that the present generation will be a long one.



J. JACKSON

PERIOD III.—1869-1909.

This period covers the presidency of Mr. Eliot, marked by radical changes and great development educationally and materially. Up to this time the Harvard Medical School was practically a proprietary school. The University conferred degrees but had no control over the finances, and little voice in appointments. The endowment was meagre. Faculty meetings were presided over by the Dean, at whose house they were usually held. The Medical Faculty paid the bills and divided up any surplus. Mr. Eliot at once took the chair at Faculty meetings. In '70 Dr. Holmes writes to J. Lothrop Motley, then Minister at the Court of St. James,—"Our new President, Eliot, has turned the whole University over like a flapjack. There never was such a bouleversement as that in our Medical Faculty."

The property of the school and its receipts were put under the charge of the treasurer of the University, the professors under salary, and in 1871 a three-year graded course with written examinations and the requirement to pass in every branch was instituted.

Before this the examinations were oral and the candidate was required to pass only a majority of the branches for a degree. It needed all Mr. Eliot's firmness and calm persistency to bring about these first changes against the active opposition of some influential professors. No one in 1870 could have foreseen the impending revolution in medicine caused by Pasteur and his followers. Knowledge of the cause of disease fathered knowledge of its cure and prevention, with the results we see today. This, of course, played directly into the hands of Mr. Eliot, but does not minimize in the least his desert. No man of his time has done so much for education, medical included, as he. None the less were his foresight and tenacity favored by circumstance.

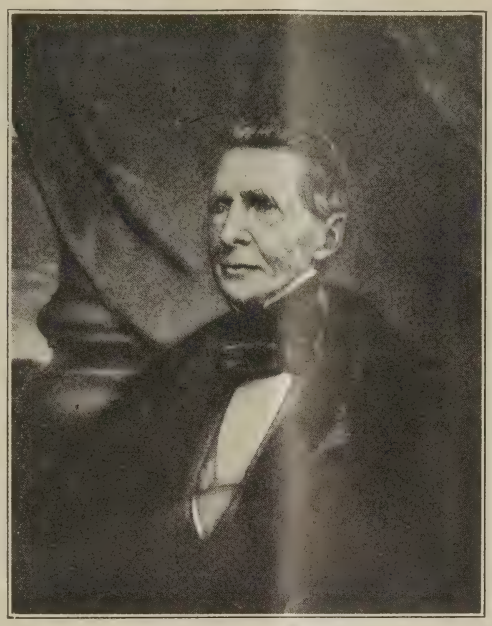
Toward 1880 the North Grove Street building became woefully inadequate, and generous friends made it possible to put up a new building on Boylston street, midway between the Massachusetts and City Hospitals, likely, it was thought, to meet all needs for many years. This building was opened in 1883, the centennial of the founding of the school. Within a few years a welcome addition was given by Dr. H. F. Sears. But laboratory demand clamored for expansion, and toward the end of the century H. P. Bowditch and J. C. Warren, eagle-eyed and lion-hearted, laid their plans. Elsewhere[1] I have told the dramatic story of the wonderful realization of their dreams, a story by itself, and can here deal only with results. Twenty-three acres of suitable land were secured within the city limits, enough for the School and a number of affiliated hospitals and institutions. In 1906 the new school buildings were opened with enough endowment pro-

Harvard Medical School, 1883

[1] *Boston Medical and Surgical Journal*, Vol. 193, No. 23, pp. 1058-1061, Dec. 3, 1925.

vided for their frugal and immediate maintenance.

During this period a fourth year, at first optional, later required, was added to the course, and the teaching body was more and more recruited from outside Boston, as gentlemen's agreements with far seeing trustees of leading hospitals were entered into, thus making it possible to give a clinician his laboratory in the form of hospital wards. One after another, the Peter Bent Brigham, the Children's and Infants', Samaritan, Huntington, and Lying In Hospitals have clustered about the School; also the Psychopathic Hospital, Carnegie Nutrition Laboratory, Dental School, Animal Hospital, and the School of Pharmacy.



JOHN C. WARREN

The admission of women has been repeatedly urged upon the School, and wisely, as it would seem, as repeatedly denied. Today four times the number of men apply for whom there is place, and there is now no lack of first rate teaching for medically inclined women. Medical education is the costliest there is, and it is uneconomic to train too large a number of those who do not make the profession their life work. Harvard is almost the last refuge of mere man.

PERIOD IV.—1909-1926

After forty brilliant years President Eliot was succeeded by President Lowell. Under Mr. Lowell's administration there has been great and steady progress all along the line. Its outstanding features have been

I. The introduction of what may be termed optional full time into the clinical branches. The selection of the professor is based only on his quality. He is at liberty to do private work if he pleases, trusted to put his school work first. There are those who believe that a clinical teacher may not be damaged by seeing some patients outside of a hospital.

II. The birth of the tutorial system—an extremely healthy child.

III. A painstaking study of examination methods, which have undergone several changes. Under the present plan the student must pass in every branch as before, but he must also pass a stiff final general examination supervised by a committee and carefully designed to test his knowledge of medicine as a whole, as well as his power to use such knowledge. This examination lasts two or three days and may be partly oral. This plan has been in operation since 1920 with very satisfactory results.

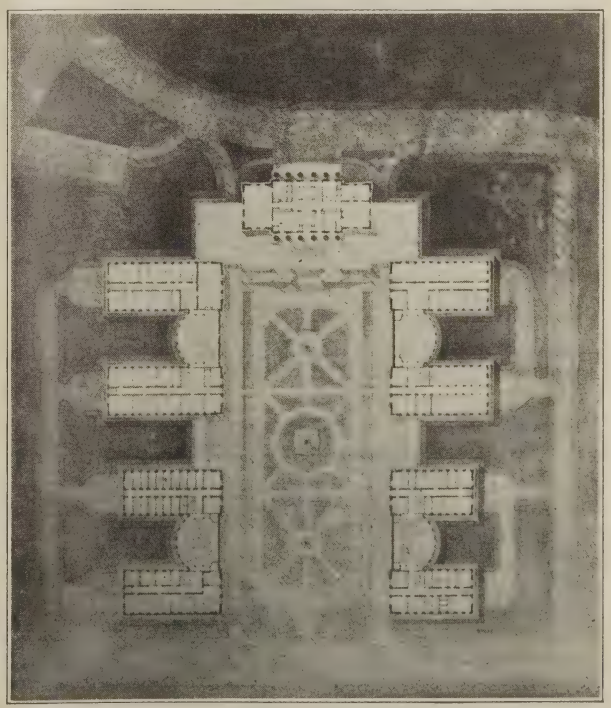
IV. The School of Public Health. One after another, supplementary to the Chair of Hygiene and Preventive Medicine, the School for Health Officers jointly with the Institute of Technology, and the Departments of Tropical Medicine and Industrial Hygiene had come into being. In 1922 all these were welded into the School of Public Health through the backing of the General Education Board. In law the School of Public Health is a separate organization. In fact, it is an integral working branch of the Harvard Medical School.

V. The Dean, Dean also of the Dental School, and School of Public Health, consecrates his whole time to his diaconal duties.

VI. A dormitory for the medical students is nearing construction. It was first suggested in print by Warren in 1912. It is planned to house and feed at the start two hundred and fifty men, with common rooms, dining room, gymnasium and squash courts. The medical student will thus soon enjoy the advantages of healthful living and association hitherto confined to students in other branches of the University at Cambridge three miles away. Alumni of the Medical School have given more than $100,000 toward the dormitory. Mr. Harold S. Vanderbilt gave $125,000 for the gymnasium with a promise of the salary of the director for five years, and later gave $575,000 for the buildings.

The table on following page may emphasize some of the changes of forty years.

This endowment seems—and is—large. Most of it is, however, restricted. If it were large enough the School would be in danger of dry rot. To live



New Buildings for the Harvard University Medical School, Boston

aggressively some hunger pangs are needed. It is the firm intention of those in power to keep demand ahead of supply. The pay of the teachers, especially

	Number of students.	*Number of teachers.*	*Endowment land, buildings and equipment not included.*	
1883	243	47		$ 200,000
1926	505	331	Medical School	11,500,000
			School for Public Health	1,750,000

those of lower grades, could be increased without risk of the somnolence of hypernutrition. This alone would absorb annually a large sum. Then there are the ever expanding avenues to and outlets from research, and the extension of the tutorial system.

The next table is interesting as showing the relative growth of the clinical and laboratory staff, and indicating the substitution of section work for didactic or clinical lectures in the clinical branches:

	Number of Teachers.	
	Clinical	*Laboratory*
1900	58	48
1913 Increase over 1900	246 per cent.	142 per cent.
1926 " " "	391 per cent.	227 per cent.

I cannot close better than by quoting in essence a brilliant professor coming from high place outside to Harvard with which he had no previous association: "The Harvard Medical School is fortunate in that, closely affiliated as it is with three great general hospitals, the clinical teaching is so varied as to tend to a broader outlook than in schools with a single hospital dominated by a single plan. The training is not stereotyped; the student does not come out as the product of an individual professor and his assistants, but learns that there are different points of view and more than one method of attaining the same end. In this respect it resembles Vienna and the larger German university schools."

It is hard to believe that the future has in store any such revolution in medicine as came about in the last half century through our knowledge of lower forms of life and their relation to vital processes of health and disease. Great changes, however, are bound to come. The general public is daily realizing more fully what medicine in the broad sense means, and I do not believe that the golden stream for irrigation will shrink. While I lack imagination to visualize the progress of the next fifty years I abound in faith, faith that there will be great progress, and that the Harvard Medical School will play a worthy part therein.

News Items.

Ensworth-Central Medical College Meeting.—The Ensworth-Central Medical College Alumni will hold their second annual meeting and banquet on the evening of October 13, at the Hotel President, Kansas City, Mo. This will be during the Kansas City Fall Clinics week. A program of unusual interest has been arranged.

New Jersey Medical Society Headquarters.—A resolution authorizing the establishment of permanent headquarters for the Medical Society of New Jersey was adopted on June 19 at the close of the one hundred and sixtieth annual meeting of the association at Atlantic City. It was the understanding that Newark, Trenton or Atlantic City will be chosen as the place for the headquarters, which will be devoted largely to public health education.

Red Cross Roll Call.—The American Red Cross has announced that its annual roll call to enlist members for 1927 will be held as usual from Armistice Day to Thanksgiving, November 11-25.

Conference of Health Workers Postponed.—The annual conference of health officers and public health nurses, originally scheduled for August 31, and September 1-2 at Saratoga Springs, has been postponed until October 11-14. It will be held in conjunction with the annual meeting of the American Public Health Association at Buffalo.

New German Health Resort Hotel.—Eilsen in North Germany, about three hours from Bremen, has just opened a new Kurhotel in addition to the well known Fuerstenhof with its American manager. This opening will be celebrated by a special reduction in rates so that those of moderate means may enjoy a sojourn in the beautiful Weser Mountains.

International Dentistry Congress.—The seventh international Congress of Dentistry will be held at Philadelphia, August 20-28. The American Dental Association has chartered a vessel to bring delegates from Europe, and in addition German dentists will come in a special ship. The Army, Navy and Public Health Service, and the governments of Germany and Japan will have exhibits. One whole day will be devoted to clinics which will cover all the aspects of dentistry.

International Stomatological Congress Members.—The following were appointed members of the American Committee of the fifth international Stomatological Congress of the *Association stomatologique Internationale* to be held in Paris in 1927: Dr. Alfred J. Asgis, Chairman; Dr. G. Reese Satterlee, treasurer; E. B. Hardisty, recorder; Dr. Oliver T. Osborne, New Haven; Dr. George W. Mackenzie, Philadelphia; Dr. Edward C. Briggs, Boston; Dr. William G. Shomeley, Philadelphia; Dr. Anthony Bassler, New York City; Dr. Louis Ottofy, Chicago; Dr. Weston D. Bayley, Philadelphia; Dr. W. E. Hocking, Devil's Lake, N. D.; Dr. F. M. Dimas Aruti, San Juan, P. R.; Dr. William G. Downs, Jr., Evansville, Ind.; and Dr J. M. Murphy, Temple, Texas.

French Government Decorates Twelve.—Twelve workers at the French Hospital, 450 West Thirty-Fourth Street, New York City, were decorated by the French Government for service to mankind on June 17. Those receiving the medals were Sister Mary of St. Elizabeth, superintendent of the hospital; Sister Mary of Eudoxie; Helen M. Moire, director of nurses; Lelia Townsend, president of the Nurses' Alumnae Association; Mrs. M. G. Bobser, superintendent of the Social Service Department; Dr. Lucien Jouvaud, president of the hospital; Dr. J. P. Hoguet, attending surgeon; Dr. P. R. Turnure, vice president of the Medical Board; Dr. M. A. Ramirez, secretary of the Medical Board; Dr. C. H. Chetwood, attending surgeon, department of urology; Dr. M. I. Blank, associate attending surgeon.

U. S. Civil Service Examinations.—The following civil service examinations have been announced by the U. S. Civil Service Commission:

Junior medical officer (interne). Applications for junior medical officer will be rated as received until August 31. The examination is to fill vacancies in Veterans' Bureau hospitals and diagnostic centers, and in positions requiring similar qualifications.

Physiotherapy aide; physiotherapy assistant. Applications for these positions must be on file at Washington, D. C., not later than August 7, October 9, or November 27. The dates for assembling of competitors will be stated on admission cards sent applicants after the close of receipt of applications. Applications received after a closing date will be considered for the next date. The examinations are to fill vacancies in the field service of the Public Health Service and the Veterans' Bureau, and a vacancy at St. Elizabeth's Hospital, Washington, D. C.

Graduate nurse, graduate nurse (visiting duty). Applications will be rated as received until December 30. The examinations are to fill vacancies in the Departmental Service, Washington, D. C., in the U. S. Veterans' Bureau, and in the Indian and Public Health Service.

Trained nurse, trained nurse (psychiatric). Applications must be on file at Washington, D. C., not later than August 7. The date for assembling of competitors will be announced on admission cards sent applicants after the close of receipt of applications. The examinations are to fill vacancies in the Panama Canal Service.

Book Reviews

NEPHRITIS

Nephritis. By Herman Elwyn, M.D., Assistant Visiting Physician, Gouverneur Hospital, New York, N. Y. New York: The Macmillan Company, 1926. Pp. 347.

After discussing the physiology of the kidney and such conditions as renal insufficiency, hypertension, and uremia, the classification of nephritis is taken up. While the ideal classification of nephritis, in which each type of the disease finds its place as a distinct and separate entity with a definite etiology, pathology, and clinical picture, is impossible at the present time, an attempt at such a classification can be made only where we can find a correlation between the pathology, the symptoms, and the change in function in a particular form of nephritis, and especially where we can find definite etiological factors.

The importance of the glomeruli in nephritis is emphasized, and the author recognizes the following forms: embolic glomerulonephritis, nonembolic focal glomerulonephritis, acute diffuse glomerulonephritis, subacute and subchronic forms of diffuse glomerulonephritis, chronic diffuse glomerulonephritis and the kidney of pregnancy. The nephroses are divided into lipoid nephrosis, the nephrosis of amyloid disease and the nephrosis of mercury poisoning.

After dilating upon the pathology, etiology, and pathogenesis of general arteriosclerosis, the subject of renal arteriosclerosis in particular is discussed. Arteriosclerosis of the kidney involving the small arteries and arterioles, the renal arteriolosclerosis of Herxheimer, a term which is becoming quite popular, is classified as follows: 1, renal arteriosclerosis involving the renal artery and its larger branches; 2, renal arteriolosclerosis without renal insufficiency, involving the small arteries and arterioles, but without the loss of a sufficient number of glomeruli to affect kidney function; 3, renal arteriolosclerosis with renal insufficiency, involving the small arteries and arterioles, with complete occlusion of many of the afferent arteries, and with the loss of a sufficient number of glomeruli to affect kidney function.

The following novel hypothesis regarding the kidney of pregnancy is presented: Throughout pregnancy there is a gradually increased irritability of the entire neuromuscular mechanism which has to do with the function of uterine contraction, producing eventually the rhythmic contractions of the uterus and the contraction of labor. This increased irritability is probably dependent upon a state of increased irritability of the presiding centers in the brain. Afferent external stimuli, psychic or physical, may also cause arterial spastic contraction. This hypothesis has the advantage of eliminating the necessity for an unknown toxin. It attempts to explain on a physiological basis the occurrence of arterial spasm, which may produce renal phenomena, the edema, the hypertension, and the convulsions.

On the whole, this book is rather an exhaustive treatise of what is known of nephritis today. The clinical picture of each type of nephritis is correlated with the corresponding pathologic changes. Each chapter has its own very extensive bibliographic references, which include German, French, English, as well as American citations. Diagnosis and treatment are well emphasized. The book is a worthy addition to the literature on nephritis.

DERMATOLOGY IN FINLAND

Förhandlingar vid Nordisk Dermatologisk Förenings Sjätte möte, Helsingfors 26-28 Aug., 1924. Utgifna af J. J. Karvonen och B. Grönroos, Helsingfors.

The Northern Dermatological Association held its sixth congress in Helsingfors, Finland, on August 26 to 28, 1924, and among the varied contributions on their program of skin and venereal diseases are noted the following:

Congenital Syphilis in children at the Infant Home of the Child Welfare Committee of Copenhagen, Harald Boas reports results with forty-eight children treated in this home, patterned after the Welander Home for Syphilitic Children in Stockholm, established in 1900, to give adequate treatment to congenital syphilitics during the first three to four years of their life, thereby endeavoring to ward off physical and mental defects among a social class that would otherwise be neglected. Other Welander homes have been established in Gothenburg and Malmö, Kristiania and Bergen, Berlin and Prague. The Copenhagen Welander Home, founded in 1909, cares for children from the very worst classes of society and is conducted rather differently, admitting not only babies but fourteen to fifteen year old children that are congenital luetics, these latter being sent to public schools while undergoing treatment and to prevent the inmates from being stigmatized the name "Home for Infirm Children" is used. As to results of treatment of the forty-eight children—with mercury, altsalvarsan and neosalvarsan—of which a detailed report is given, the final accounting up to date is that twenty-six have been discharged (twenty-two still remaining in the home) and of these only two are failures, one being sent to an institution for mental *debiles,* the other to a reformatory as incorrigible. The remainder have entered life as artisans, laborers, dressmakers and servants and with encouraging records.

Potassium permanganate and its therapeutic efficacy in skin diseases was the subject of a dissertation by C. Rasch, of Copenhagen, who finds it useful in local prurigo and psoriasis, painting with a two per cent. solution or as ointment according to Unna (Kali permang 1, Tinc oxide 10, water 10); in moist eczema and salvarsan dermatitis the "red baths"—ten grams permanganate to the bath—have given excellent results and also in impetigo herpetiformis.

Gonorrhea in male children was the topic presented by Ake Ingman (Helsingfors) who reports ten cases in children from two to twelve years of age. Arthritis gonorrhoica artic. cricoarythenoideæ, a rare condition, was the contribution of Paavo Pirilä (Helsingfors), described as occurring in a man with recent Neisser infection, all other etiological factors being carefully excluded. Johan Almquist of Stockholm discoursed on the curability of gonorrhea. (Published in *Acta Dermato-Venerealogica,* Vol. VI, Fasc. 3, Stockholm, 1925.)

Salvarsan injections and the grave disturbances at

times following these—crises nitritoïdes—was the subject presented by Axel Cedercrentz (Helsingfors), who observed six cases in close sequence, and while the origin of such manifestations as cyanosis, chills, nausea, diarrhea and fever are still obscure, he believes that it may be arsenical poisoning, caused by oxidation of the salvarsan contents in contact with the metal of the syringe.

Acrodermatitis continua (Hallopeau) a condition so rare that up to 1918 only fifteen cases had been reported was discussed by James Stoandberg (Stockholm), his experience with three cases being described in detail.

Medicoliterary Notes.

Dr. Edward S. Godfrey, Jr., director of the Division of Communicable Diseases of the New York State Department of Health, has an interesting and suggestive article in the *American Journal of Public Health* for June on the Administrative Control of Measles.

* * *

The U. S. Department of Commerce, in its published report of automobile fatalities for the four weeks ending June 19, 1926 from seventy-eight large cities in the country, states that the total number was 549 as contrasted with 493 for the corresponding four weeks of 1925. The daily averages for the two four-week periods were 19.6 and 17.6.

* * *

Among articles of importance on the subject of child welfare in the June issue of the *American Journal of Public Health* are Immediate Opportunities in Child Health Conservation, by Dr. Donald B. Armstrong; Examination of the Child Before Entering School; and Relation Between Health Supervision on Schools and Industries, by Dr. Ellen S. Stadtmuller, and Dr. C. O. Sappington, respectively.

* * *

The Argentine battleship, Moreno, is enroute to Buenos Aires with two thousand minnows as part of its cargo. These will be used in an effort to stamp out malaria in the Argentine Republic, which they do by feeding on the larvae of the mosquitoes carrying the malaria germ.

* * *

A recent survey by the U. S. Children's Bureau shows that, although child indenture is looked upon as a relic of the age when handicrafts flourished, it is still permitted in twelve states of the Union. For instance in Wisconsin 827 children were indentured on written contracts by the State Public School at Sparta under a law enacted in 1885. Many of the children received virtually no pay, were looked upon as servants, often deprived of school, allowed no recreation, and sometimes cruelly treated.

* * *

Thirty-six organizations, most of them national in scope, represented by sixty research workers, are cooperating with the U. S. Bureau of Standards in helping to solve industrial problems. The purpose of these cooperating activities is to make available well equipped laboratories for the mutual benefit of government, workers and public.

* * *

An interesting bibliography, published in the June number of the *Monthly Labor Review*, has been compiled by Edna L. Stone, librarian of the library of the U. S. Department of Labor, on the subject of old age pensions in the United States.

* * *

The eternal flapper has existed in the Chinese Empire since the Christian era, according to a note in the *Science News Letter*. Two powder boxes dating back to the Han Dynasty, 200 B.C.—220 A.D., have been found in a grave in Korea. There was powder in them and it was still white after the passage of so many centuries.

* * *

The *World's Health* for June contains a number of interesting articles on welfare and medical aid for sailors. They are an introductory article entitled The Ship Sails On; The International Labor Office and the Protection of the Health of Seamen, by M. R. K. Burge, director of the London branch of the International Labor Office; Amongst Our Sailors, by Charles le Goffic; Venereal Disease and the Merchant Seaman, by Dr. L. W. Harrison, of the Ministry of Health, London; Activities of the United States Public Health Service on Behalf of the Merchant Seamen, by Surgeon General Hugh S. Cumming; The Seaman's Health, by Dr. F. Humbert, chief of the Health Division of the League of Red Cross Societies; The Plight of the Deep Sea Fisherman, by Claude Farrère; The Need of Welfare Work for Merchant Seamen, by Fleet Surgeon W. E. Home of the British Navy; and Hygiene in the French Merchant Service, by Dr. Henri F. Schaeffer, port sanitary officer of Havre. A reference list on the health of merchant seamen gives important reading matter in English, French and Dutch.

* * *

Forestry experts are urging the rapid using up of chestnut trees in the southern Appalachian forests before the chestnut blight, which is fast attacking all the trees, makes the wood rotten and so worthless. The organism which is killing all American chestnut trees is a fungus which was brought into the country on contaminated nursery stock from Asia a few years ago. In its native home, the fungus was not so deadly, for many of the trees had become somewhat immune to its ravages. Experiments are now being made in the hope of discovering some foreign chestnut which will resist the fungus.

* * *

The Malaria Commission of the Health Organization of the League of Nations has just issued for distribution its Reports on the Tour of Investigation in Palestine in 1925. The report discusses the past and present prevalence of malaria in Palestine as a whole, and the measures that have been taken to deal with it; appendices give the ordinances, regulations and measures for malaria control, and photographs and plans for various drainage works and other structures for this purpose.

* * *

Ninety-five leaden pellets, weighing twenty-four grams, were found in the appendix of a woman recently operated upon by Dr. Sonnenfeld of Berlin. The patient was a forester's daughter, and had swallowed the shot while eating game killed by her father. They caused no discomfort, and the surgeon discovered them while performing an operation having nothing at all to do with the appendix.

* * *

The Trudeau Sanatorium at Saranac Lake, N. Y., has recently published its forty-first annual report.

* * *

The Proceedings of the New York Pathological Society, October-December, 1925, have just been published. The volume includes Some Unrecognized Dangers in the Use and Handling of Radioactive Substances, by Dr. Harrison S. Martland; Granuloma Venereum, by Dr. Max Goldzieher and Dr. Samuel M. Peck; A Primary Squamous Cell Epithelioma of the Trachea, by Dr. Silik H. Polayes; Pathology of Fowl Paralysis, by Dr. Alwin M. Pappenheimer, Dr. Vernon Cone, and Leslie C. Dunn; Syphilitic Stricture of the Left Main Bronchus, by Dr. Chester R. Brown; Complete Transposition of Arterial Trunks, by Dr. Morris Dreyfuss; Thrombosis of the Abdominal Aorta, by Dr. Chester R. Brown; Idiopathic Dilatation of the Esophagus, by Dr. Leila Charlton Knox; and Relation of Iodine to the Human Thyroid Gland in Certain of Its Pathological States, by Dr. Richard B. Cattell.

* * *

A folk high school patterned after those in the rural districts of Denmark has been established in the hill country near Brasstown, North Carolina. It is to be called the John C. Campbell Folk School in memory of the late John C. Campbell, who began the work necessary to the later establishment of the school under the auspices of the Russell Sage Foundation. The primary of such a school is, not to fix facts, but "to enliven and enlighten." It is independent of, though sympathetic with, the church, completely outside the state system, though subsidized to a limited degree by the state; it has no academic requirements, sets no examinations, gives no credits. The whole aim is to supply real culture in the broadest and best sense of the term.

Abstracts from Current Literature

NEUROPSYCHIATRY

Neurological Conditions.—W. Sharpe (*American Journal of Surgery,* Vol. XXXIX, No. 10) states that in the operative treatment of brain injuries and in acute conditions of spinal cord lesions, particularly those affecting the cervical segments, the two periods of severe initial shock and terminal medullary edema in which no operation should even be considered, must always be remembered; extensive neurological examinations should be postponed until the signs of severe shock have disappeared; the knowledge of the neurologic lesion to be obtained by careful physical examinations, lumbar punctures, combined cisterna magna—lumbar puncture observations, etc., are of great interest to the physician and yet the patient must be in a satisfactory general condition to avoid being made worse by these methods of examination.

Intracranial Hemorrhage.—W. Sharpe (*American Journal of Surgery,* Vol. XL, No. 2), suspecting that acute intracranial hemorrhage of the newborn occurs more frequently than supposed, experimented on five hundred consecutive newborn babies with results that confirmed his suspicions. Nine per cent. of the total number were found to have hemorrhagic cerebrospinal fluid. At the same time a lengthened coagulation time of the blood was not always found. The Rodda method was used and although the bleeding time might still be lengthened and yet the coagulation time apparently be within normal limits, the great importance formally ascribed to hemorrhagic disease of the newborn as *the* etiological factor in intracranial hemorrhage seems unwarranted. Premature babies seem more liable to intracranial hemorrhage than are the ones born at full term. Breech extraction in this series is again a frequent cause of intracranial hemorrhage, and prolonged labor with and without last resort low forceps application is also a definite etiological factor.

The clinical signs in all cases were most meager and if a routine lumbar puncture had not been performed, it is doubtful whether the condition of intracranial hemorrhage could have been even suspected in many cases. Difficulty in nursing and prolonged drowsiness were the two most common signs. When coagulation of the blood of the ruptured supracortical veins is insufficient to prevent continued venous oozing, the use of blood coagulants, such as calcium lactate, mother's blood, hemostatic sera, etc., may be of value to increase the coagulability of the blood even if the coagulation time is normal. But treatment by increasing the coagulability of the blood should be combined with drainage from the cerebrospinal system of the blood already escaped from the ruptured vessels.

Treatment of Head Injuries.—J. C. Weaver (*Surgery, Gynecology and Obstetrics,* September, 1925) advocates rigorous adherence to the classification and type of treatment as outlined by Dowman, which classification he forthwith presents. Regarding the use of magnesium sulphate he adds that by way of precaution, the possibility of magnesium sulphate poisoning must be kept in mind, and care must be taken in acute traumatic cases not to confuse the symptoms of intracranial pressure with those of increased tension plus profound shock.

If, as often happens, the patient has lost large quantities of blood or has sustained complicating injuries that have brought on profound shock, then dehydration is contraindicated, as the depletion of an already impoverished and failing circulation will bring about a fatal termination.

In shock, the respiration as a result of air hunger will be above the normal rate, the temperature below normal, and the pulse rapidly rising. While in increased intracranial tension the respiration will be below normal and the temperature rapidly ascending with the pulse.

Fractional Ligation of Common Carotid Artery.—H. H. Kerr (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 5) puts forth an operation of fractional occlusion, illustrated by three cases which produced good results, and commenting as follows: There is a definite advantage in common carotid ligation, which not only occludes the affected vessel but also the vessel from which an anastomosis might bring recurrence. The danger of common carotid ligation lies in the possible embarrassment of the cerebral circulation of that side. This complication is escaped or avoided through the collateral circulation by way of the anterior communicating or vertebral arteries. Ligation of the common carotid does not interfere with this collateral. It is necessary, however, that the collateral cerebral circulation be given a chance to develop. This is best accomplished by my operation of fractional occlusion.

Optic Nerve Affections.—H. Hays (*American Journal of Surgery,* Vol. XL, No. 2) presents several cases demonstrative of the fact that a lesion of the optic nerve may result from an inflammation or infection of the posterior ethmoid cells or sphenoid sinus which may not be evident on the most minute examination of the nasal cavities. Even most careful x ray pictures often will not throw any light on this relationship. But an experienced ophthalmologist, who knows that pressure can be exerted on the optic nerve or that a disturbance in the circulation within the blood vessels in the nerve can take place from a diseased condition of the sinuses, after ruling out every other etiological factor, may then insist that the seat of the trouble is in the posterior ethmoid cells or in the sphenoid or both.

In all these cases, the question arises as to the type of operation that should be performed. Should one be content to remove a small portion of tissue only or should he perform a radical operation? Many rhinologists believe that an aeration of these parts is sufficient—that is, that only enough of an operation should be performed to allow of freer circulation. My feeling is that the middle turbinate bone and the posterior ethmoid cells should be removed as thoroughly as possible; that a sufficiently large opening should be made into the sphenoid sinus to allow of free exploration and drainage; that enough of the anterior ethmoid cells should be removed to allow of drainage from the frontal sinus and that both antral cavities should have a large enough opening made into them to allow of subsequent washing. No matter whether the eye symptoms occur on one side only, I firmly believe that all the sinuses on both sides of the head should be explored; for one can never tell exactly which sinus is at fault or whether all the sinuses have something to do with the symptoms.

All such operations should be performed under local anesthesia. The block method of anesthesia is best because it assures an almost bloodless field. The patient should be operated upon in the recumbent position. One should use care in curetting the upper ethmoid cells. It is not necessary to probe into the frontal sinus. One is assured of free drainage of the frontal sinus if he properly removes the anterior ethmoid cells. Lastly, the opening into the antra should be made large enough to allow one to wash them out when the patient returns to the office for treatment.

Brain Abscess of Aural Origin.—Courtenay Yorke (*British Medical Journal,* February 21, 1925) reports six cases that illustrate the fact that localizing signs are frequently absent in brain abscess, and that therefore it is often difficult to know whether the cerebrum or the cerebellum is affected. In left temporosphenoidal abscess word deafness is usually present, but if the disease be well advanced, the general hebetude will make it impossible to test for sensory aphasia. Crossed hemiparesis and homolateral oculomotor paresis are, in the author's opinion, rarely present in temporosphenoidal abscess. In cerebellar abscess nystagmus and some form of ocular paresis are the most frequent localizing signs, but even these are often absent, as are also asynergia and homolateral paresis. The most significant symptom of acute brain abscess is severe pain in the head, which is subject to the most terrible exacerbations. This is an early symptom and is invariably present. It continues until a dull apathetic state ensues, which is the precursor of coma.

The best operative procedure is to open the mastoid and endeavor to find the track of the disease. On exposing the dura the presence of a brain abscess is usually either immediately obvious by the escape of pus through a hole in the dura or suspected on account of inflammatory changes in the dura. Occasionally, however, the dura appears normal

and in such cases the dura should be incised and the brain explored. Should the patient's condition be very critical and the signs be those of temporosphenoidal abscess, it is better not to disturb the mastoid but to make a vertical incision above the ear and explore the brain through the squamous temporal. It is very important to make a large opening in the dura and skull on account of the adjacent encephalitis, which, unless decompressed, will maintain of intracranial pressure and thereby favor extension of brain infection. In the case of temporosphenoidal abscess it is not sufficient to remove merely the roof of the tympanum and antrum. Part of the squamous temporal should be removed as well. For similar reasons cerebellar abscesses, unless very small, should be drained behind or through the lateral sinus as well as internal to it. A cerebellar abscess is much easier to miss than a cerebral abscess, and many elude the most thorough search.

Raynaud's Disease.—L. de Gennes and P. Isaac-Gorges (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* March 11, 1926) report a case in which the restriction of the manifestations to certain fingers could be traced to prolonged, occupational local irritation. The patient, a woman of forty-two years, had had since childhood a tendency to pallor and coldness of the fingertips. Ten days previous to admission to a hospital she had begun to have, in conjunction with a slight infectious upset with arthralgia from which she soon recovered, attacks of severe pain and paresthesias in the hands with cyanosis and coldness of the fingers. These attacks lasted about ten minutes, and in the intervals there was numbness of the finger-tips and some darting pains. Gradually the paroxysms gave way to a continuous state of acrocyanosis, numbness and pain. Later symmetrical localizations of gangrene developed in the two hands. The thumbs were unaffected, the tips of the ring fingers presented only a small black area; the middle fingers showed somewhat larger lesions, while the most extensive gangrene affected the little and especially the index fingers, in which all of the palmar aspect of the distal phalanges was involved. There was no evidence of syphilis. Diathermy twice daily brought much relief from the pain and acrocyanosis, but had no perceptible effect on the gangrenous process. Some eruptions apparently of trophic origin appeared on the legs. It was concluded that the gangrene of the finger-tips could not be solely due to vascular spasm. An excised bit of tissue showed pronounced changes in the arterioles of the skin. The localization of the process in certain fingers was ascribed to the patient's factory occupation in which a thin stream of soap suds constantly moistened the index and middle fingers, while the thumbs and other fingers were folded under and not reached by the fluid.

Fractures of Malar Bone and Zygomatic Arch.—J. R. Garner (*International Journal of Medicine and Surgery,* Vol. XXXVIII, No. 11) offers an operation for reducing fractures of this kind and replacing the malar bone without resorting to open operation with its attendant disfiguring scar. The approach is made through the mouth. The patient is anesthetized and the operation proceeds in the following manner:

The entire right side of the face, including the lips, was treated with iodin and then neutralized with alcohol; an assistant next elevated the upper lip and retracted it, so as to expose the sulcus formed by the reflection of the mucous membrane of the mouth from the inner side of the cheek to the gums. This area was also treated with half strength iodin, and an incision not more than one-half an inch in length made parallel with the alveolar process and extending through the mucous membrane down to the buccinator muscle. This incision was about on a line with the first molar tooth. While the assistant held the incised area exposed, the incision was first swabbed out with half strength iodin, and then the tip of a closed pair of stout curved hemostats was introduced and forced gently between the fibers of the buccinator muscle and carried gently up to the lower margin of the malar bone, being guided by the hand on the outside of the cheek. When the end of the instrument was felt to impinge on the malar bone, it was depressed and gently forced backward and upward behind the bone. Care had been taken during the entire introduction and passage of the forceps that no part of the shaft came into contact with the lip or mouth of the patient. Having passed the tip of the forceps behind the malar bone, pressure was exerted upon the forceps so as to raise the bone slightly, and while held in this raised position by the forceps, the malar bone was manipulated into position by the operator's hand on the outside of the face. Upon releasing the pressure on the forceps and pressing the bone back it was found readily to assume its normal position and showed no tendency to recurrence of the displacement. The forceps were next withdrawn from behind the malar bone, and by changing the position only slightly, made to pass in a similar manner behind the depressed zygomatic arch, which was brought back into proper position by the same manipulations used in connection with the malar bone. The forceps were then withdrawn, the field of operation cleansed and the small wound allowed to granulate without suture. A drain was not used. The patient was placed on liquid diet for three days and then cautioned to eat only on the other side of the mouth for a few days longer. An alkaline mouth wash was ordered and persisted in at frequent intervals for the first week.

It is needless to state that asepsis is the keynote to success in this operation. There are no structures in the zygomatic fossa which are likely to be injured if a blunt instrument is used and only a very limited amount of pressure exerted in introducing it. The operation offers a very ready means of access to both the malar bone and the zygoma, and, all other things being equal, from a cosmetic standpoint is far superior to any procedure requiring incision through the skin of the face.

Intracranial Hemorrhage in Newborn.—W. Sharpe and A. S. Maclaire (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 5) discuss a series of cases in which the following technic was employed:

A lumbar puncture needle of the size and caliber of the ordinary intramuscular needle was inserted into the fourth lumbar interspace—the baby being flexed in the horizontal position by a nurse so that the head and knees were approximated, and care was taken to have the spinal canal and the median line of the head on a level and parallel with the table. Upon entering the subarachnoid space successfully, the small rubber tube attached to the spinal mercurial manometer was connected with the puncture needle and a careful reading of the pressure was made, the child being quiet and the acute anterior flexion of its body being relaxed. The opening of a stopcock on the needle now permitted cerebrospinal fluid to escape into a sterile test tube. The character of the fluid was noted and if clear and under normal pressure (four to eight millimeters), two cubic centimeters for laboratory examination were drained into the test tube. If under increased pressure (above eight millimeters) and especially if bloody, blood-tinged, or yellow, then an amount was allowed to escape slowly until the pressure registered by the manimeter became normal, care being taken not to permit the fluid to escape rapidly in a quantity large enough to lower the pressure below normal. Thus it was possible to estimate accurately just how much fluid could be drained safely and with no danger of medullary pressure or vascular complications. If the fluid was bloody to any degree, then an immediate second puncture was performed in the third lumbar interspace merely to confirm the presence of blood in the cerebrospinal fluid of the first puncture. Blood due to the puncture itself, technically, is differentiated by the fact that this extraneous blood streaks the cerebrospinal fluid as it drips from the needle and is not homogeneously mixed throughout the cerebrospinal fluid in the test tube; besides, the second lumbar puncture is another control of the findings, both of the blood and pressure as disclosed. According to the pressure and blood consistency of the cerebrospinal fluid, a lumbar puncture of spinal drainage was performed in our first series every twenty-four hours until the cerebrospinal fluid became clear and under normal pressure. In the later series, however, the interval between drainage punctures was made every twelve to twenty-four hours, and in the last series of test cases, a puncture of spinal drainage was being considered even as frequently as every six hours, according to the pressure and the blood consistency of the cerebrospinal fluid. That is, the method of lumbar puncture was used not only as a means of diagnosis, but more as an active method of drainage of the free blood in the cerebrospinal fluid in the hope that clotting of this free blood could be entirely avoided, so that there would not remain unabsorbed any hemorrhagic clot and thus possible organization residue and future blockage of the normal absorption of the cerebrospinal fluid.

Lumbosacral Region and Sciatic Pain.—M. S. Danfort and P. D. Wilson (*Journal of Bone and Joint Surgery,* January, 1925) present a series of cases upon which they comment as follows:

The clinical examinations of the backs show that in all these cases there was evidence of disturbance in the region of the lower lumbar spine. In the majority of the cases this was substantiated by röntgenological examination. Clinical evidence of nerve involvement was found in over half the cases. In many of the cases signs were present which helped to localize the portion of the nerve affected. The areas of anesthesia or hyperesthesia, the changes in the reflexes, and the points of tenderness suggest either the fourth or fifth lumbar roots and the first and second sacral roots as the ones involved. In the opinion of the authors, the anatomical studies show that changes occurring at the lumbosacral junction have the greatest possibility of affecting nerve structures. Conditions existing in the intervertebral canal between the fourth and fifth make that the next most likely point for nerve involvement. The solid nature of the sacrum offers little possibility for involvement of the sacral nerves during their exit, and the subsequent course of these nerves is such as to render their involvement unlikely. They have approached the subject of sciatic pain from four different viewpoints: first, anatomical dissections; second, clinical examination of the spine; third, neurological. examination for localizing evidence; and fourth, röntgenological examination. They believe that the evidence obtained in all the investigations indicates that sciatic pain of the type studied is a symptom of disturbance in the lower lumbar spine and that the site of the lesion is most frequently the lumbosacral junction, and the nerve chiefly involved is the fifth lumbar.

GASTROINTESTINAL

Rectal Cancer.—J. M. Lynch (*American Journal of Surgery,* Vol. XL, No. 2) finds the following procedure the most satisfactory. An incision is made from the back of the anus to the sacrococcygeal joint. The coccyx is removed and the bowel is separated from the sacrum as high as the promontory. The patient is then changed to the recumbent position; the abdomen opened; both leaves of the mesentery are cut; the superior hemorrhoidal is tied, and the tumor, with the glands and fat, is separated by dissection; the anterior rectal wall is separated; the lateral ligaments are clamped and tied. At this stage one of two procedures can be chosen: 1, The bowel is divided and the patient left with an artificial anus; the caudal end is packed down in the pelvis; the peritoneal floor is repaired and the abdomen is closed. 2, The bowel is pulled through the posterior opening; the abdominal wound is closed; the tumor is removed from below; the sigmoid is implanted in the anal canal. On three occasions I have removed the bowel from the brim of the pelvis to the anus and six months later implanted the sigmoid at the anal opening.

Abdominal Surgery.—P. K. Gilman (*American Journal of Surgery,* Vol. XL, No. 1) concludes that the advantages of combined nitrous oxid and local anesthesia are striking. Since our manipulations are perforce gentle, shock is largely eliminated. It is not rare for the patient to leave the table with an unchanged blood pressure. The patient is conscious by the time the postoperative toilet is complete. The often distressing and prolonged recoveries of consciousness from ether are eliminated.

As already stated postoperative nausea and vomiting are practically absent, except at times for an immediate small emesis. Bowel paresis and accompanying distension and gas pains are markedly reduced in their frequency of occurrence. Combined anesthesia patients take fluids earlier, may be nourished sooner than the ordinary ether patient, convalescence more rapidly and suffer less general postoperative distress.

Duodenal Ulcer and Pulmonary Tuberculosis.—I. R. Lisa (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 5) states that while the total number of autopsies (four hundred and sixty-six) upon which this report is based is hardly sufficient to warrant positive final conclusions, the following deductions bearing on the relation of duodenal ulcer to chronic pulmonary tuberculosis may be drawn from this review of cases.

1. Duodenal ulcer is found at autopsy more frequently with pulmonary tuberculosis than with any other disease.
2. The ulcer is usually non-tuberculous in character.
3. Pulmonary tuberculosis associated with duodenal ulcer is of usually chronic form.
4. The age of most frequent occurrence of ulcer is twenty-five to thirty-five years.
5. Careful gastric histories in cases of pulmonary tuberculosis, checked by radiological findings, will probably reveal duodenal ulcer in a greater number of cases than is now diagnosed.

Anorectal Fistula.—C. F. Martin (*American Journal of Surgery,* Vol. XXXIX, No. 12) emphasizes the point that every pararectal abscess potentially is a fistula, as it becomes a fistula the moment the abscess either is incised or ruptures spontaneously. Unless the point of entrance of the infection is located and thoroughly dealt with at this time, a fistula surely will result, no matter how widely the abscess cavity has been drained. A wide excision of the infected area, including a free division of all tissue up to and through the infected crypt is the only logical method for preventing fistula.

The internal opening of a fistula will be found usually at or near the anorectal line, while the position of the external opening or openings will depend upon the lines of extravasation of pus or upon the point or points selected for incomplete surgical drainage.

Between these two points the fistulous tract may be palpated, making the use of a probe confirmatory but not a necessity. A trained finger is more useful than a probe.

Some fistulas may be so tortuous and complicated as to require an x ray picture to gain a clear conception of their direction. It is important that this picture be taken from two or three directions, for a picture taken in only one plane is often misleading. Very satisfactory plates may be obtained if a heavy bismuth paste be injected under little pressure through the tracts. If much bismuth has been injected, it may be removed by syringing with olive oil.

Avoidance of the uneven contour of the rectal outlet is best accomplished by a complete excision of the fistulous tract, including the removal of all surrounding inflammatory masses, which are offshoots of the main tract. All overhanging tissue must be excised, even if it results in a sacrifice of a portion of the sphincteric area, in order to make a scar that will be as flat as possible. This flattened scar will present an even surface for the remaining portion of the sphincter to contract against, giving a surprisingly satisfactory degree of control.

In these extensive cases it is important that, after the primary packing is removed, no other be inserted, as too much packing retards healing and produces distorted scars. The wounds should be cleansed often and only an external pad dressing be employed. I am particularly partial to a moist dressing of boric acid solution with no packing of any description.

I do not advise the excision of fistulas and primary suture as a routine measure, for very few cases are suited to this method. It should be used only in the comparatively short and extremely simple types, where it is possible to completely excise the tract and yet be able to obtain good coaptation of the cut surfaces without undue traction upon the line of suture. Care must be taken to protect the anal apex of the wound to prevent reinfection.

Intestinal Obstruction.—T. G. Orr and R. M. Hadden (*American Journal of Surgery,* Vol. XXXIX, No. 10) after experimenting on dogs to note the effect of administration of chlorides in toxemia, found that similar treatment in humans reduced the operative risk. Patients with acute obstruction of the pylorus and small intestive show typical blood and urine chemical changes which are indicative of the degree of toxemia. Since the fall in chlorides appears to be the chief factor in the chemical changes treatment with chlorides naturally suggests itself. All patients with acute intestinal obstruction should have preliminary treatment with water and sodium chlorid before anesthesia and operation.

In the very toxis cases we have estimated that about one gram of sodium chlorid per kilo of body weight is sufficient for the initial dose. This would be about seventy grams for an average sized person of one hundred fifty pounds. With this should be given two to four liters of water. It is desirable to introduce this salt and water as rapidly as is possible with safety. It may be given by hypodermoclysis, intravenously or by rectum. Proctoclysis is the poorest method in the very ill because the very ill patients retain it poorest and it is often impossible to determine accurately the quantity taken in a given time. The other two methods are effi-

cient, fairly rapid and accurate. Both may be used if necessary. Solutions with strength varying from 0.8 to 3 per cent. may be used under the skin with satisfaction. The stronger the solution the more slowly it should be given. A five per cent. solution may be given slowly in the vein with good results. The continuous intravenous drip of Matas may be used.

After this preliminary treatment the general improvement in the patient is usually noticeable and it is at this time operation may be done.

The preoperative treatment and operation by no means ends the therapy. The water and salt should be resumed immediately following the operation and continued as long as needed. The quantity of chlorid given should be checked by blood and urine chlorid determinations when possible. In the absence of such facilities the general condition of the patient must furnish the evidence. As long as the patient has a dry tongue and thirst, water and sodium chloride are needed.

Lymphaticostomy for Peritonitis.—C. H. Whiteford (*British Journal of Surgery,* Vol. XIII, No. 50) suggests that though no further agreement has as yet been arrived at on the indications for lymphaticostomy, its further trial is desirable.

Identification of the duct may be difficult. In at least thirty per cent. of cases the operator must be prepared to find a duct which does not consist of a large single trunk opening into the subclavian vein.

In recorded cases in which the escaping lymph was sterile, the toxicity of the lymph appears to have been taken for granted. In records of future cases, proof of such toxicity should be given.

Permanent or prolonged obliteration of the lumen of the duct, by complete division or by ligature, appears to accentuate unnecessarily the risk of a flow from the fistula so persistent and profuse that death occurs from starvation. Preservation of the lumen might give the chyle a chance of resuming, in part at least, its original route. Provision should be made during the performance of lymphaticostomy for stopping the loss of chyle without having to perform a further operation on a debilitated patient.

OBSTETRICS AND GYNECOLOGY

Patency of Fallopian Tubes.—S. Seidas (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 5) describes a simple method of determining the patency of Fallopian tubes as follows:

Possessing a sphygmomanometer, one requires only a uterine cannula, a tube, and some rubber tubing to complete the outfit. The blood pressure cuff is detached from the sphygmomanometer, and the T tube and cannula assembly connected with it. The bulb is worked in the same manner as when one takes the blood pressure. After the cannula is introduced into the cervix and properly adjusted, the bulb is compressed very gently so that the pressure rises only five to ten points with each compression. After each compression of the bulb the operator pauses a moment to note the rise of the mercury. When the pressure reaches a height sufficient to open the tube (in patent cases) and cause the escape of air into the peritoneal cavity, the mercury begins to drop, and continues to drop, until the pressure becomes equal to the resistance offered by the tube. At that point the mercury remains stationary. The bulb is now compressed again, driving the mercury up from ten to twenty points. When the bulb is released the mercury falls rapidly to its former height or a little lower. Another compression of the bulb causes a repetition of the previous occurrence. We are now confident that the patency of a fallopian tube has been established. Although the first characteristic drop of the mercury is manifest evidence that the tube is open the two additional compressions of the bulb serve the purpose of introducing sufficient air into the peritoneal cavity to elicit the shoulder pain as confirmatory evidence of tubal patency.

So small is the amount of air introduced by this method that the shoulder pain does not appear until after the patient has been up and about for several minutes. This pain, though definite and unmistakable, is so mild that, as a rule, it does not interfere with the patient's customary activities, and disappears entirely within twenty-four hours.

It is understood that the cases thus tested are carefully examined to exclude conditions that contraindicate insufflation, and that strict asepsis is practised throughout the procedure.

A Study of the Tubes and Sterility.—S. H. Geist and M. A. Goldberger (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 5) obtain the following results of their study:

1. Variations in the course of the intramural portion of normal tubes may offer a bar to impregnation.
2. Intramural lesions may make the passage of sperma or ova impossible.
3. Intramural lesions may be present with or without closure of the fimbriated extremity.
4. One may get a positive or negative insufflation test in normal tubes.
5. One may get a positive or negative insufflation test in diseased tubes.
6. A positive insufflation test means that tubes are patent to gas under pressure, not necessarily to spermatozoa or ova.
7. It is essential to locate the occlusion in a case with a negative test if any reasonable hope of assistance from operative procedure is to be entertained.

Leucocyte Count in Ectopic Gestation.—L. K. P. Farrar (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 5) finds that:

1. In ectopic gestation the leucocyte count fluctuates according to the amount of fresh blood being thrown into the peritoneal cavity and the rate of absorption.
2. The leucocyte count tends to drop quickly to normal as the blood in the peritoneal cavity is absorbed or walled in; forty-eight per cent. of one hundred and fifty cases of ectopic gestation had a normal leucocyte count before operation was performed.
3. The leucocyte count was normal in twenty-nine cases of unruptured tubal pregnancy in which there was no free blood and in forty-three cases of ruptured pregnancy in which the blood was walled in.
4. The leucocyte count was an index in one hundred and fifty cases to the amount of free blood in the peritoneal cavity and the polymorphonuclear leucocyte count was increased markedly only in cases having fresh blood in the pelvis and increased in direct proportion to the amount of recent blood found at the time of operation.
5. The fluctuating leucocyte count together with the moderate elevation of temperature differentiates ectopic gestation from a purulent salpingitis with its more uniformly high leucocyte count and fluctuating temperature.
6. In cases of rupture of tubal pregnancy the steadily rising leucocyte count indicates active bleeding before the fall in the number of red cells or hemoglobin gives warning of the condition.
7. The leucocyte count to be of diagnostic value must be taken at least daily and in critical cases even hourly and used in conjunction with the history and clinical findings in the case.

Differential Diagnosis in Cases of Ectopic Adenomyoma in the Groin.—Willis S. Lemon and Arthut E. Mahle (*Medical Clinics of North America,* January, 1925) report three cases in which the ectopic adenomyomas in the groin were confused with adenopathies of the groin. In the differential diagnosis between these two conditions, there are certain factors relating to ectopic adenomyoma in the groin that makes them characteristic. The most important of these is the fact that such growths have appeared only in women, that they are associated with menstrual disorders, and in two instances there were actual tumor formations within the pelvis. They are sluggish, slow growing tumors of benign character, taking vears to develop, and without disagreeable symptoms, excepting during the menstrual period, when they take upon themselves the same functions that are characteristic of the uterine mucosa. The tumor enlarges and its swelling produces discomfort or real pain; the growth becomes tender to the touch and cysts form as small bluish areas beneath the epithelium. These are not only visible but palpable, and on incision contain blood. A negative characteristic is worthy of consideration. In contradistinction to tumors of the nodes, they are found to appear in areas not occupied by lymph nodes. These characteristics suggest to the examiner that the tumor itself must in some way be related to the uterus, whose mucosa alone has the inherent possibility of periodical engorgement. Such a tumor then must

be composed of tissue derived from, and identical with, the uterine mucosa, and therefore may be classified with the adenomyomas, although in an unusual location for such tumors. This is not surprising, however, inasmuch as ectopic types of adenomyomas have been recorded.

Treatment of Tumors of the Spinal Cord.—Alfred W. Adson (*Northwest Medicine*, July, 1925) says that surgical removal is the only proper treatment for benign tumors of the spinal cord. Radium treatment may be of slight palliative value for malignant lesions or angiomas, but too much should not be expected. Intramedullary tumors are the most difficult to treat, since they do not permit reaction, most of them being extensive, infiltrating gliomas. The procedure usually carried out in their treatment is splitting of the cord dorsally, permitting the tumor to extrude spontaneously. Usually this brings about temporary improvement, and in an occasional case permanent improvement may result. It is unwise to attempt removal of an angioma, since decompression in conjunction with the use of intensive radiotherapy is probably the most effective form of treatment. Ependymal cell glioma in the filum terminale can be resected, provided there has not been an erosion through the spinal canal into the soft tissues.

Theoretical Basis of Synergistic Obstetrical Anesthesia and Its Practical Significance.—E. Vogt (*Zentralblatt für Gynäkologie*, January 9, 1926) advises the following technic:

The treatment begins with an intramuscular injection of two c. c. of a fifty per cent. solution of sterile magnesium sulphate together with 0.006 gm. morphine in one syringe. Special ampules have been manufactured for this purpose. The injection of morphine should not be repeated, but the injection of the magnesium sulphate solution may be repeated two or three times if the quieting effect of the first injection is not sufficient or disappears too soon. One hour later a rectal injection of an etheroil mixture is given. Both the ether and the oil should be of the purest quality. Up to two gm. of quinine may be given to offset the paralytic action of the three narcotics on the uterus. Bromides are preferred because of their solubility. Only enough alcohol is added to keep the quinine in solution. The addition of the alcohol also prevents the too rapid diffusion of the ether fumes and the resulting overdosage. The following etheroil mixture is recommended: Quinin hydrobromide, 0.6 gm.; alcohol, 8.0 c. c.; sulphuric ether for anesthesia, 70 c. c.; and olive oil up to 120 c. c.

The patient must be kept isolated and absolutely quiet. The mixture is injected into the rectum through a Nelaton catheter during an interval of the labor pains. The patient is kept in the left posture and a wad of cotton is kept against the rectum with the nates compressed to prevent the escape of the mixture.

The points of practical importance of synergistic obstetric anesthesia are summed up as follows:

1. The contraindications include diabetes, eclampsia without convulsions, jaundice of pregnancy and severe eclampsia, and also diseases of the respiratory tract and the lung, the liver and kidney; also circulatory disturbances and inflammatory changes in the colon, especially in the rectum, and fecal incontinence.

2. The cases suitable for this form of anesthesia are only those in which the previous course of the pregnancy was smooth and those in which a further smooth course is expected.

3. The duration of the anesthesia is about four hours.

4. In primiparæ the anesthesia is induced when the cervical os is about four to five cm. in diameter, and in multiparæ when the cervical canal admits two fingers.

In almost every case a painless course of the delivery may be achieved up to the appearance of the head. If the synergistic anesthesia does not last sufficiently long, a few drops of ether will aid in protecting the perineum.

6. The author has never observed any serious injuries or sequelae of troublesome nature. The fetal heart sounds remain unaffected, and the infant is born in excellent condition.

7. Weak labor pains, which may appear in the course of the anesthesia, are combated by minimal repeated doses of hypophysin.

8. This method, which requires a continuous, careful supervision by a physician, must not be left in the hands of a midwife. It is, therefore, not suitable for general practice and in the home.

Endoscopy of the Uterus.—Harold F. Seymour (*British Medical Journal*, December 26, 1925) describes a new and quite simple hysteroscope, with which he has been able to see and remove a large fibroid polyp and diagnose a case of fungous endometritis. The difference between the appearance of the mucous membrane of the uterus during menstrual life and after the menopause is striking; in the latter case the membrane is much paler and smoother. He has also been able to bring into view the ostium of a Fallopian tube.

The author believes that endoscopy of the uterus will prove useful in diagnosing the uterine causes of genital bleeding, since it can reveal such lesions as glandular hyperplasia of the endometrium, polypi, retained products of conception, chorionepithelioma, and carcinoma. A piece of tissue can earily be removed for microscopic purposes under direct vision. The diagnostic curettage is often a disappointment. The instrument described and the method of using it gave the advantage of extreme simplicity. It is of great value both diagnostically and therapeutically.

Differential Diagnosis Between the Kidney of Pregnancy and Chronic Nephritis in Pregnancy and Between Eclampsia and True Uremia.—Th. Heynemann (*Zentralblatt für Gynäkologie*, October 10, 1925) calls attention to the fact, in general, the diagnosis of chronic nephritis in pregnancy is made much too often. A high rise of blood pressure, red blood cells in the urine and albuminuric retinitis, which has even to the present time been considered as proof of the existence of a chronic nephritis, are found to the very same extent in the kidney of pregnancy. With the appearance of kidney symptoms the diagnosis of kidney of pregnancy should be made only in the late months of pregnancy until the contrary is proved, especially, when eclampsia or the kidney of pregnancy has already preceded it, when a twin pregnancy exists, or when the pregnant woman is a primipara.

On the other hand, the existence of a chronic kidney disease in pregnancy should be assumed to exist in the presence of symptoms of a pronounced renal disease early in the first three to four months of pregnancy, in so far as a hydatid mole does not exist or eclampsia or a kidney of pregnancy has not already preceded during former pregnancies.

The absence of hematuria and increased blood pressure speak in favor of a kidney of pregnancy, but hypertrophy of the left ventricle, on the other hand, speak in favor of a chronic nephritis or sclerosis, especially, when there are other symptoms pointing toward the vascular system. In this connection, albuminuric retinitis, marked headache and marked rises in blood pressure acquire a certain significance.

Furthermore, according to ophthalmologists, the occurrence of certain changes in the bloodvessels of the background of the eye speak in favor of chronic nephritis at the very beginning of the retinitis. Personally, the author has no experience in this respect. But its occurrence even in the recurrent kidney of pregnancy must be borne in mind.

The previous history must be given special consideration in regard to the occurrence of renal diseases. The occurrence of such especially during pregnancy speak strongly in favor of recurrent kidney of pregnancy, but whene they occur outside of pregnancy they speak more in favor of glomerulonephritis. The statements of the patient must be considered very critically. The physicians who treat these cases and hospitals should by all means be consulted as to their knowledge of these patients.

Menstruation.—S. D. Ludlum and E. McDonald (*Surgery, Gynecology and Obstetrics*, Vol. XLI, No. 5) conclude from their study that menstruation is a time of vagotonia or vagus stimulation and that this can be shown in the smooth muscle reaction of the intestine as pictured by the x ray. The wave of vagus preponderance begins from eight to two days before menstruation, reaches its height during menstruation and returns to the intermenstrual condition from three to six days after menstruation. There is some evidence that among other factors this vagus preponderance is, in part, at least, due to the accumulation of calcium in the blood and tissues and that calcium is cast off at the time of menstruation. It is possible that some of the preliminary pains of menstruation are due to intestinal cramps from vagus stimulation. Drugs and salts which reduce the vagus stimulation relieve the menstrual pain.

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GREGORY STRAGNELL, M. D., *Editor*

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Medicolegal Notes.

TRAUMATIC ORIGIN OF INFECTION HELD NOT SHOWN

In an action on an accident insurance policy, providing that the insurer would not be liable for infection unless introduced through an open wound caused by external violent and accidental means, which wound must be visible to the naked eye, the Kentucky Court of Appeals holds, Bahre v. Travelers' Protective Assn. of America, 277 S. W. 467, that if the infection was introduced by means of a bruise or other traumatic injury which did not manifest itself for over a week, and there was no open wound visible to the naked eye, the injury would not be compensable under the terms of the policy.

It was also held that evidence of the only physician who testified that an infection of the insured's thigh might have resulted from a bruise or injury received a few days before he saw the insured or might have been the result of an infection he had years ago would not authorize a verdict for the plaintiff, a jury not being permitted to speculate upon the verdict.

In this proceeding, the evidence of the medical experts as to the condition of the deceased's skull at the time of the autopsy, and the presence therein of the fracture and the two hemorrhages, the extent and character of these hemorrhages, and their origin and cause, and their probable effect upon the deceased, and whether they, or either of them, were sufficient to produce death, dealt entirely with matters with which only medical men are familiar, and concerning which they alone could give any intelligent information to the Commission. This evidence, being uncontradicted, was binding upon the Commission, and, according to the above rule, the latter could not reject the same and act upon their own knowledge.

It was held, however, that, under the facts in evidence before the Commission, the opinion of the doctors that the stroke occurred prior to the fall was mere conjecture on their part and not based upon any evidence warranting such a conclusion, there being nothing to show that the pontine hemorrhage could not have occurred immediately following the fall or during the hour during which the deceased lived after receiving the blow from the fall. The courts conclusion therefore was that the Commission was not bound by the opinion of the medical experts that the proximate cause of the deceased's death was the stroke of apoplexy.

There was, however, no evidence from any source to indicate that the death of the deceased was due to the fall, and the burden of proof was upon the applicant for compensation to show that the injury arose out of as well as in the course of the employment.

Moreover, if the evidence before the Commission was insufficient to justify the expert witnesses in concluding that apoplexy was the proximate cause of the death, the court thought that for like reasons it was insufficient to justify a conclusion on the part of the Commission that death was due to the fall, uninfluenced and uninduced by the stroke of apoplexy. With the evidence in such a state, any opinion as to the proximate cause of the death of deceased was held to be a mere surmise and conjecture and not based upon any foundation sufficient to support a warrant of fact. The evidence being considered insufficient to support it, the award was annulled.

FILING REPORT BY PHYSICIAN UNDER WORKMEN'S COMPENSATION ACT—FAILURE DOES NOT AFFECT PHYSICIAN'S RIGHT TO RECOVER FROM EMPLOYER

The New York Appellate Division holds, Landberg v. Seymour Dress Co., 212 N. Y. Supp., 432, that, "under section 13 of the Workmen's Compensation Law, no claim for medical or surgical treatment is enforceable except 1, as incidental to, or a part of, an award to an injured employee, and 2, unless, within 20 days following the first treatment, the physician or surgeon furnishing the treatment shall furnish to the employer and the Industrial Board a report of the injury and treatment on a form prescribed by the Industrial Board. This applies to every claim by a physician or surgeon for services rendered to an injured employee, payment of which is sought through an award by the Industrial Board, and whether employed by the employer or employee. This, of course, has no application to the right of a physician or surgeon to recover in an action at law from the employer for services rendered at his request."

EVIDENCE ESTABLISHING TESTAMENTARY CAPACITY

The New York Appellate Division holds, In re Delmar's Will, 214 App. Div., 500, 212 N. Y. Supp., 456, that the testimony, on the issue of testamentary capacity, of a physician who gave his answers as to the testatrix's condition and ability to comprehend the nature of her act to a hypothetical question, and who had never seen the patient, had not attended similar cases for over 25 years, and admitted that the testatrix might have been able to understand the simple bequests, but not the disposition of the residue, did not rise to the probative weight necessary to overcome the testimony, offered by the proponent of the will, of the doctor who attended her, the attorney who made the will, and another witness who was present, which testimony bore all the earmarks of credible statement, and carried conviction by its inherent probability.

ALLEGED FAILURE BY HOSPITAL TO USE X RAY IN DIAGNOSIS IS CAUSE OF ACTION EX DELICTO UNDER CALIFORNIA STATUTE

The Circuit Court of Appeals, Ninth Circuit, holds, Chalmers v. Southern Pacific, 8 F (2d) 480, that an action against a railroad company which maintained a hospital for the care of its injured employees, which alleged that the defendant, in violation of its contract, refused to use the x ray to diagnose a fractured vertebra, was not an action on contract, but an action in tort within the meaning of the California statute of limitations, Cal. Civ. Proc., sec. 340, subd. 3, requiring action to be brought within one year.

WHEN PRESUMPTION AGAINST SUICIDE MAY PREVAIL

Where the cause of one's death is unexplained or undisclosed by evidence, or where evidence tending to prove self-destruction is contradicted or impeached, or some evidence adduced is consistent with a reasonable hypothesis that the death was not self-caused, the presumption against suicide or self-destruction may prevail. But such presumption cannot properly prevail where uncontroverted evidence, whether direct or circumstantial, shows how the death was caused and that it was self-inflicted, and not by accident or the act of another. New York Life Ins. Co. v. Weaver, C. C. A., 5th circ., 8 F (2d), 680.

VERIFICATION OF X RAY PICTURES

The New York Appellate Division holds, Vincent v. Otis Elevator Co., 212 N. Y. Supp. 76, that a finding of the State Industrial Board that a claimant at the date of the accident was suffering from a tubercular condition, which became activated by the accidental injury, based upon certain notes interpreting x ray pictures made by a physician who was not called to verify the pictures or the notes, was grounded upon other than legal evidence, necessitating the reversal of the award.

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Concerning the Nature of Malignancy*

J. GEORGE ADAMI, C.B.E., M.D., F.R.S.

Vice Chancellor of the University of Liverpool

Liverpool

It is as a pathologist that I have been invited to open this discussion. I doubt whether I can perform a greater service than that of directing your thoughts to the nature of malignancy or, more broadly, to certain general principles underlying disordered and excessive cell growth. And this because once again the belief in a specific or unitarian microbic origin of cancer is gaining force and increasing acceptance.

I admit that there is much that is attractive in the theory of the specific nature of cancer: I am old enough to have been taught that phthisis was due to the tubercular diathesis, to a defect of constitution, and that malaria, on the other hand, was miasmatic, brought about by particular states of the atmosphere, and thus have experienced the revulsion in attitude, and what is more to the point, clearing in outlook and increased mastery over disease that has followed the discovery and universal acknowledgment of the essential microbic factor in both of these greater afflictions of humanity. I can wholly sympathize, therefore, with the longing to accomplish for this other foremost affliction what has been achieved for tuberculosis and malaria. For if now after forty years and more since the discovery of the tubercle bacillus we are still groping after, without having surely achieved, methods of immunity and of cure, based upon our knowledge of the properties of that bacillus, no one can venture to deny that the knowledge of those properties has placed our understanding of the disease and of its treatment upon a wholly different plane. It has raised that treatment from the empiric to the scientific level.

Were it possible for us to discover the germ of cancer then this same advance to a higher plane would be brought about. It is but human that earnest hope should inspire belief, and this all the more when over and above hope there are certain facts which, so far as they go, support the assumption.

I am not going to detail all those facts: the more outstanding will suffice for the present purpose. There is in the first place the fact that while the more virulent bacteria growing in the body lead to cell necrosis and destruction, less virulent strains of the same bacteria together with other less virulent bacteria stimulate cell growth. That growth, it is true, as observed in general only continues so long as the bacteria which cause it remain alive and multiplying: it ceases and undergoes retrogression and absorption with the death and disappearance of the causative microorganisms. In general it does not become malignant, that is to say, autonomous, continuous of itself when once started. Possibly here our conception of what constitutes malignancy may be wrong. It may be more correct to say that thus far we do not regard as malignant a local growth of cells of any order which recedes and disappears with the death of the microorganism which has induced it, or again that progressive growth is a feature of malignancy.

Passing, however, beyond these more general considerations, there are certain fully established cases in which microbes are known to be directly associated with the development of definitely malignant growths. The first in order of time and of completeness of detail has, it is true, to do not with animal but with vegetable growths, namely Erwin F. Smith's long continued and most thorough studies upon the crown galls which affect many flowering plants. From these he has isolated a bacillus, the Bacillus tumefaciens, has grown it for years in pure culture, and inoculating it into a variety of plants has produced most often purely cellular tumors, undifferentiated and of sarcomatous type, capable of forming by direct extension what in the absence of blood and lymphatic vessels may almost be termed metastases (for in their mode of growth by such direct extension they are comparable with the secondary growths seen, for example, around a mammary cancer). But if the inoculation be made in the neighborhood of growing points, more complicated organoid or teratoid tumors may be produced, with development of irregular and multiple aerial roots, twigs and leaves. I have personally studied these crown galls and can find no valid departure in them from what we accept as malignant growths in animals. The only point about them which is not yet to my mind fully established is whether when active growth is once started it can continue independently, that is to say without the continued intracellular multiplication of the bacilli. There are indications, particularly in the teratoid

*An address opening the discussion upon Cancer, at the Annual Meeting of the Royal Institute of Public Health, Bristol, May 21, 1926.

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forms that this is so. The main point is that herein we have evidence of the existence of a bacterial species capable of originating a progressive, invasive and malignant growth.

The other outstanding case is, I need scarce remind you, that of chicken sarcoma with its ultramicroscopic filterable virus which, first studied by Rous in New York and independently confirmed by the discovery of another strain by Tytler, now of Cardiff, and others, has been the primary subject of the remarkable investigations by Gye and Barnard which are creating so much interest at the present moment.

The main feature differentiating this from all forms of transmissible malignant tumors in animals hitherto studied is this, that whereas all those other tumors are transmitted by grafting and so represent the continued progressive growth of the tumor cells in series from animal to animal, here, as in Erwin F. Smith's crown gall in plants, a tumor of sarcomatous type originates *de novo* in the individual inoculated with the virus, without grafting, and without transmission of the tumor cells of the other individual. It originates obviously through the proliferative stimulus exerted by the filterable virus under certain conditions upon the connective tissue cells of the inoculated animal. It is true that the tumor so induced is not a cancer proper: it is a sarcoma and not a carcinoma, and I have not a little sympathy with Dr. John Brown who this afternoon is going to urge a reversion to the older and sharper distinction between cancer proper and sarcoma. It is true also that not a few pathologists support Dr. Brown in regarding sarcomas as coming into a different category from carcinomas proper, holding them to pass by imperceptible gradations into the granulomas or inflammatory new growths. But it is equally true that the chicken sarcoma fulfills all the usually accepted criteria of malignancy: it is progressive, invasive, infiltrating and destroying the normal tissue cells of the part, and capable of giving rise to metastatic growths—at a distance.

With these striking examples before us it is not unnatural that there are many today who jump to the generalization that all primary malignant growths of all orders originating in the tissues of man and the higher animals are of microbic origin, aye and some who go so far as to hold that one common filterable virus is responsible for the genesis of all malignant growths throughout the animal world.

Now as a general pathologist it is my duty to state as emphatically today as I did twenty-five years ago that no one who has made a broad study of neoplasia, of all the varieties of new growths, both innocent and malignant, affecting mankind and the higher animals, can for one moment support either of these theses, neither the first nor, still less, the second. Time and considerations for your wellbeing forbid that I should place before you the full argument. I remember that it took me the better part of an hour and a half to develop it before the Yale University Medical Society. Rereading that address, I am impressed by the fact that, barring the absence of certain more "modern instances" which would yet further strengthen it, it is as valid, and I trust as convincing, as if it had been written within the last few months. You will find it in full in the *British Medical Journal* of March 16, 1901, in résumé.

1. Neither histologically nor clinically can any precise demarcation be made between benign and malignant growths: a growth so well differentiated and so benign as a chondroma may nevertheless have metastases: and a fibroadenoma of the mammary gland may pass imperceptibly into the carcinomatous state.

2. Time and again the pathologist finds it impossible to state whether he is dealing with a benign or a malignant growth. In other words there exists no absolute demarcation between the one and the other condition: histologicaly there is no constant tissue change to indicate that some new factor has come into play, bringing about a change in the nature of the growth, save the obvious invasion of the immediately surrounding tissue. Nor is it an exaggeration to say that all benign growths may take on malignancy.

But now these benign growths are of very different orders. If we attempt rapidly to classify them we find that they come under the following groups: First there are the teratomas. These teratomas represent the attempted and perverted growth of one individual within the tissues of another individual, either as fetal inclusions, in which during fetal life the feebler of a pair of twins becomes caught up into the body of the stronger, or by serial deduplication, as when from either the anterior or posterior growing point certain totipotential cells take on independent growth and produce a mass of tissues of various orders, projecting from the base of the skull through the mouth, or at the other end forming a coccygeal teratoma. These we may speak of as *twin teratomas,* as distinct from the *filial teratomas* in which, as in ovarian dermoids, totipotential germ cells without fertilization take on independent and parthenogenetic growth and produce a jumble of various tissues, and this often long years before the attainment of sexual maturity. If the Duke of Wellington spoke of his son, the Marquis of Douro, as a "damned parody," *a fortiori* may these growths be given that appellation.

These teratomas originate from what the morphologist Barfurth has termed *totipotential* cells, either from germ cells, which as such are capable of giving origin to tissues of all orders, or from cells, such as those of the growing points of the embryo, which have become so little differentiated that they still retain like properties.

Closely allied to these are the *teratoblastomas,* derived from cells of the growing embryo which are *multipotential,* i. e., which in the course of development have lost the power of giving origin to tissues of all orders, but which nevertheless have the power of giving origin to tissues of several orders. There are, for example, certain tumors of the kidney region, composed of kidney tubules, and cords of cells resembling the first stage of the uriniferous tubules, of muscle fibres, and even of bone, evidently derived from cells of the dorsal metameres which under normal conditions might have undergone division and differentiation into vertebral, muscular and renal elements, which becoming displaced, continue an independent existence and sooner or later give rise to a jumbled mass of all these tissues.

This leads on to the third main group, the *blastomas* proper, comprising the bulk of what I may term ordinary tumors, tumors whose predominant element, as I have elsewhere pointed out, is formed of cells which in the course of development and differentiation have

become *unipotential,* capable of giving rise to one order of tissue only, be it of connective tissue type, as for example fibrous tissue (as in the fibroma), cartilaginous (as in the chondroma), or epithelial (as in the various orders of epithelioma and adenoma). And this either in the fully differentiated form, when the tumors most often are benign, or in various stages of dedifferentiation and persistence in or reversion to the vegetative or embryonic type, and then it is that we deal with malignant tumors, sarcomas and carcinomas.

As I pointed out at the International Congress of Medicine in London in 1913 there is yet another order of excessive growth of particular tissues that deserves consideration in this association, the remarkable group of what I have called the *hyperblastoses,* conditions in which individual tissues undergo diffuse relative overgrowth. Once I mention these, you will recall how they exhibit features in common. There is, for example, adiposis dolorosa, or Dercum's disease, in which there is excessive development of the fatty tissue; acromegaly, with its striking overgrowth of the bony skeleton; and gliomatosis, with its diffuse overgrowth of the neuroglia. With these may, I think, be placed such conditions as neurofibromatosis multiplex or Recklinghausen's disease, and multiple ecchondroses together with the various forms of leucemia. The feature about all of these is that while they tend to be diffuse they are not universal. They affect the particular tissue in particular parts of the body, acromegaly, for example, not all bones but the bones of the cranium and the extremities, adiposis the fatty tissue of the back of the neck, it may be, or the buttocks, or the abdomen more particularly. And for our purposes quite the most important feature is that in the outstanding examples of the condition we clearly have to deal with disturbances of the endocrine functions as essential factors—in acromegaly with pituitary disturbance; in some forms of adiposis the pituitary is also involved, in other forms, as in Dercum's disease, administration of thyroid leads to resorption of the fatty growths.

Now as pathologists surveying the whole field we have to ask:

1. Can we recognize a common origin for all these various orders of growth?

2. Is the assumption of malignancy confined to any one order, or may it present itself in all?

3. Can we detect any clinical signs, or histologically any local irritative or other signs indicating the introduction of a new factor in the passage from the benign to the malignant state?

1. On the face of it, after the classification just given, the answer to the first question must be in the negative, when some tumors, like the teratomas, represent the attempted growth of one individual within the tissues of another, and others represent the aberrant growth of individual tissues of the individual himself. Probing deeper into the matter, however, we seem to see that one and all are the outcome of cells that are out of place. Not that all cells out of place—embryonic cellrests or the irregular proliferations set up by irritation, necessarily give origin to tumors, but that the condition of out of placedness, or heterotopia, is a necessary antecedent to tumor growth.

2. The answer to the second question is more clear cut. Any and every order of tumor is capable of manifesting malignancy. Malignancy is not confined to the blastomas proper. Certain teratoblastomas, notably the compound renal tumors, are extraordinarily malignant; frequent in early childhood, the indications are that in some cases they begin development before birth, and this with no evidence of malignancy in the mother. The most intensely malignant tumor of all is not a blastoma proper, but a grafter tumor, what we may term a teratoid blastoma, the deciduoma or chorioepithelioma malignum, derived from, in fact entirely constituted of the trophoblastic outer layer of the chorion of the embryo. As I pointed out in 1902, the choroidal epithelium is naturally, or physiologically, malignant. To secure nutriment for itself and for the embryo of which it is a part, it exhibits a tropism, sending out processes which invade and erode the maternal tissues until they reach and penetrate the uterine blood sinuses, there absorbing food which is carried by the capillaries of the chorionic villi to the growing embryo. When abortion takes place, and only then, and apparently only when abortion takes place before these outer trophoblastic cells are worn out and disappear, then it may happen that, as I have elsewhere expressed it, the habit of work being interrupted becomes replaced by the habit of growth, and these decidual cells being well fed multiply in the maternal blood sinuses, fill them, and carried to the heart and the lungs multiply there, becoming rapidly fatal. As Professor Blair Bell has very acutely pointed out, here is an example, not of prior dedifferentiation, but of persistence of properties. Here, it seems to me, is the crucial case. Do we need to postulate the presence of germs to stimulate cells to carry out their normal functions? If so, then logically speaking we must demand the presence of germs to explain the development of twins, because the fraternal teratoma is only a twin gone wrong. And indeed we must predicate the beneficent action of germs to bring about the fertilization of the ovum, and the proliferation of the ultramicroscopic microbes also. We must thus accept, with the old Manchester poet, John Byrom, that:

> Big fleas have little fleas upon their backs to bite 'em,
> And little fleas still lesser fleas, and so *ad infinitum.*

3. I think, gentlemen, that after this *reductio ad absurdum,* you will admit that it is not necessary for me to answer in full the third question. If cells normally in the vegetative stage, can continue growing and can produce malignant growths, we need not postulate the necessity for the introduction of a new factor to initiate growth in all cases. I have already, you will remember, admitted freely that we possess indubitable cases in which microbes initiate not merely cell growth but malignancy. But this is altogether another matter from saying that one particular order of microbe is concerned in the production of all malignant tumors. That is a wholly untenable proposition.

Time and your patience forbid that I should this afternoon take up the further and most debatable question of why certain cells out of place take on malignant properties while others do not, and that I should enter into the relative parts taken by the growth stimulus affecting certain cells on the one hand, the tissue and body resistance on the other. I shall be satisfied if I have shown you that there is

not one but possibly many factors concerned in malignancy: that all malignant tumors have not a like causation, and that while it is right and proper that we should investigate these various factors, it is unwise to become obsessed with the idea that the solution of the cancer problem is to be reached by proclaiming and by investigating one mode of causation only. And that being so, taking everything into consideration, the wiser and the more fruitful course at the present time is to study not what originates but what ends cancer. Therein I feel convinced that we perform the greater service to humanity. That is why I have consistently interested myself in Coley's work in New York, begun thirty-five years ago, and why now I wholeheartedly support my colleague, Professor Blair Bell, in his employment of colloidal lead. Both workers are devoting their lives to the one object of causing the death and absorption of malignant tumors by the administration of drugs in such a way that, through the blood stream, they reach all the foci of growth scattered through the body. Both acknowledge that surgical removal and radium and x rays are valuable adjuvants, but only adjuvants, since not one of the three methods can surely effect the removal of all metastases. Without in any way holding that we have at last discovered the sure method of arresting cancer in all cases, without in the least believing that in colloid lead Blair Bell has discovered the ideal substance, I nevertheless fervently believe that a huge advance has been made, that, as it were, we have turned over a new page, and that from now onwards medical research will concern itself over the provision of ever better and surer methods of arresting cancerous growth. Therein I fervently believe must lie our foremost hope and our achievement for the good of suffering humanity.

Affections of the Epiphyses Peculiar to the Second Decade*

IRVIN BALENSWEIG, B.S., M.D.
New York

(*Concluded from page* 147)

That of December, 1923, showed the presence of a premature ossification of the epiphyseal line; good reduction of the fragments; diminution of the joint space. That of August, 1924, was similar in all respects to the previous röntgenograph, and in addition shows some irregularity of the head of the femur, plus an outward rotation of the shaft.

Case V.—A. Z., aged thirty-one years; male; was operated upon some sixteen years ago at the Hospital for the Ruptured and Crippled by Dr. R. Whitman for an epiphyseal separation of the left hip of one year duration. He returned because of persistent pain about the hip and knee. Patient states that he remained free from pain for a number of years following the operation.

Examination showed a well developed male of normal weight for his height, walking about without assistance, but with a left hip limp; the limb was maintained in an attitude of flexion and external rotation. Flexion of the hip was possible to a right angle; extension to 170°; abduction for 10°; internal rotation is completely restricted. The affected limb was shorter by one inch. The thigh presents an atrophy of three inches, and the calf one half inch.

The röntgenograph of November, 1924, discloses the presence of a large mushroomed head; short and broad neck; coxa vara deformity. The interarticular space is of normal dimensions. The findings are quite similar to those observed in the late or healed stage of some cases of Perthes' disease.

Vertebral epiphysitis is an affection of the spine occurring during the second decade of life and more especially in females. It is usually insidious in onset and the child is brought by the parent because of either the pain and fatigue complained of or because the school teacher or parent have observed the presence of round shoulders. The patient is not likely to care to play with the other children as much as formerly and is inclined to remain indoors and take to excessive reading in a faulty position thereby aggravating the round shoulders and also bringing on eye strain, etc.

Etiologically the condition is probably a mild epiphyseal infection that is aggravated by weakening of the epiphyses due to excessive growth, overweight and the faulty posture and the superincumbent weight of the spine. The posture may be faulty because of the fatigue and muscle pain thereby forcing the patient to assume the most comfortable position. The subjective symptoms therefore are:

1. Pain either between the shoulders or in the lumbosacral region.
   may be absent in long standing cases.
   In the early stages aggravated by exercise.
   subsides with rest.
2. Fatigue
   more apt to be most severe later in the day.
3. Stiffness
   after sitting.
4. Round back—functional or organic. In the early stages of the affection the curvature is more apt to be functional, but as the condition progresses the deformity becomes fixed and as brought out by Buchman may result in a rotary lateral curvature as well.
5. There is usually found to be an accompanying myositis either due to infection or strain. The muscles most often found to be tender are the rhomboids and trapezii; then the long muscles of the back.

There is tenderness of the spinous processes; on either side of the spine; and occasionally of the crests of the ilia. This latter condition I believe is due to muscle strain or the pull of the muscles on their

*Read before the Harlem Medical Association, February 3, 1926. From the hospital for the Ruptured and Crippled.

points of origin and not to involvement of the epiphyses as no röntgenologic changes have been noted.

Röntgenologic findings—The spine may not reveal any curvature. The epiphyses become enlarged, moth eaten and therefore indistinct. The intervertebral spaces are observed to be cloudy, irregular or diminished. The vertebral outlines frayed and wedged. Later one observes a distinct posterior curvature of the spine and in some few cases a lateral deviation in addition. Lastly there are the stages of regression with a return to normal or progression to osteoarthritis especially if the condition arises during the latter part of the second decade (Buchman).

CASE REPORTS

Case VI.—J. H.; aged sixteen; male, schoolboy. Seen for the first time March 25, 1925, because of

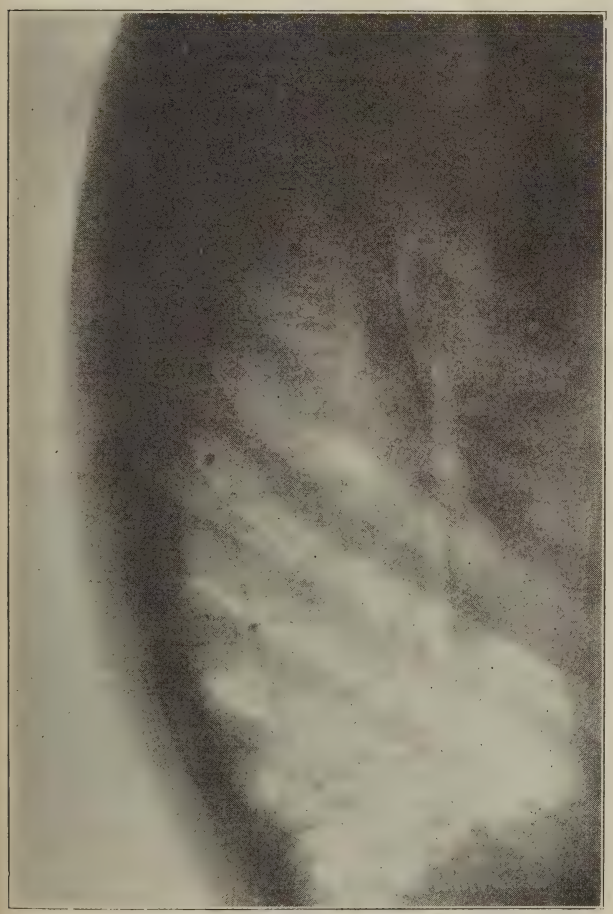

Fig. 7.—Case VII. J. A. Reveals the presence of a round back and irregularity of the dorsal vertebræ due to an epiphysitis.

a curvature of the spine and occasional pain across the lower part of the back. Mother stated that the deformity was first observed one year ago. Patient at the time of onset of the condition complained only of becoming tired rather quickly. Well developed adolescent male of normal weight for height and age, presented a marked posterior curvature of the spine extending from the second dorsal to the second lumbar vertebra with the apex of the curve at the level of the seventh dorsal vertebral spinous process. There was a slight deviation of the lower dorsal spine to the right with a compensatory curve to the left in the lumbar region. The lower extremities were of

Fig. 8.—Case VIII. S. D., röntgenogram of the right knee of March, 1923, showing evidence of disease of the tibial tubercle.

equal length. The röntgenogram of March, 1925, revealed an irregularity of the lower dorsal vertebrae accompanied by wedging resulting in the posterior curvature. The dorsal intervertebral spaces were diminished and irregular. The patient was admitted in the hospital and placed on a convex stretcher frame with traction both to the head and pelvis. Remained on the frame for a month at the end of which time a distinct improvement was noted. The patient was discharged from the hospital wearing a plaster jacket. The plaster jacket was converted into a corset after being worn for two months and the patient instructed to lie on frame during the day and sleep on it at night (the hospital frame and traction apparatus having been removed to the patient's home). The patient's height on his return home had increased two inches. His condition at the end of seven months was quite satisfactory.

Case VII.—J. A.; aged fourteen; male; schoolboy; was first observed August, 1922, because of round shoulders. The mother stated that she noticed the deformity one year ago and that it had been progressing rather rapidly. The patient complained of no pain, but tired easily. Examination disclosed an overgrown boy presenting a moderate round back. The spine was freely movable in all directions. While under observation a slight deviation of the dorsal spine was noted. As a result of this finding the patient was advised to enter the hospital, where he was placed upon a convex stretcher frame. He remained in the hospital for six weeks at the end of which time he was discharged wearing a plaster jacket. The jacket was renewed from time to time and in spite of this form of therapy the curvature became more pronounced. The examination in Feb-

ruary, 1924, revealed the patient to walk quite awkwardly with an elevation of the right shoulder, and an upper right dorsal curvature of the spine. There was also noted a mild compensatory curvature of the lumbar spine to the left. The dorsal curve extended from the fourth to the twelfth dorsal segments with the apex at the level of the seventh dorsal spinous process. The lower extremities were of equal length. March, 1924, a fixation operation of the spine was performed, fusing the articular facets and the spinous processes from the level of the fourth to the eleventh dorsal vertebrae. Final examination October, 1925, showed the patient to walk with the shoulders on equal levels, and the curvature to have been arrested. Result to be considered satisfactory.

The röntgenographs taken during the course of

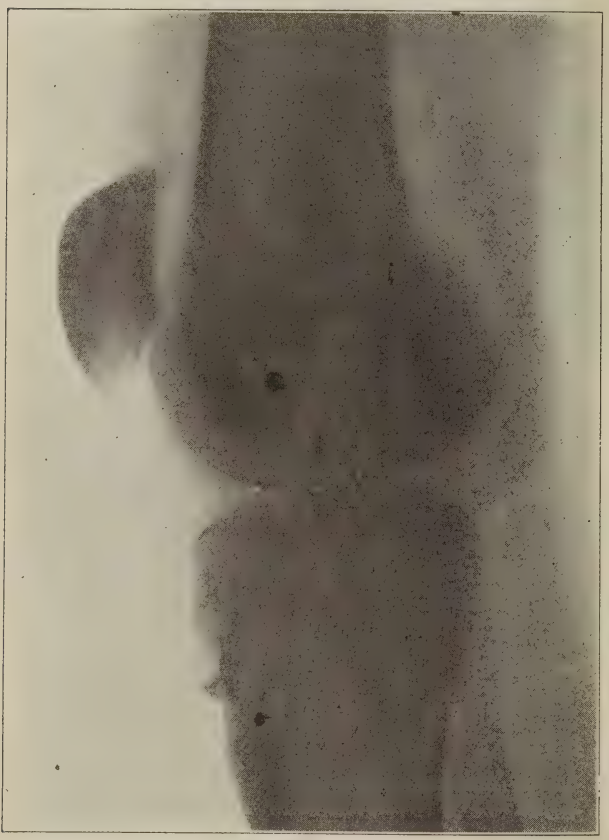

Fig. 9.—Case VIII. S. D., röntgenograph of August, 1924. Disease is healed.

the affection revealed in addition to the curvature a well advanced epiphysitis involving the lower seven dorsal vertebrae.

Osgood-Schlatter disease of the tibial tubercle. Here we are confronted by two distinct types. 1. The common form that appears to be infectious in origin, and occasionally accompanied by a mild traumatism. 2. The infrequent type; that due to a distinct injury and revealing a marked displacement of the entire epiphysis; or a fracture of the epiphysis with separation of the lower fragment. (I have personally never observed an instance that could be classified in this way).

The condition is most frequently observed in males between the ages of ten and seventeen years. M. M. Pomeranz records two instances in females in a series of seventeen cases. About twenty-five per cent. are found to be bilateral.

SYMPTOMS

Onset is insidious. The pain complained of is in the pretibial region; intermittent; worse on going up

Fig. 10—Case XI. E. E., subchondral fragmentation of the epiphyses

and down stairs; relieved by rest. The greatest amount of pain is observed to be during the last few degrees of extension of the knee, and due to the fact that the greatest strain is placed upon the tubercle through the patella tendon at this time. Objectively there may be a limitation in extension to within five to ten degrees of normal. Pretibial swelling; occasional local heat; acute tenderness on direct pressure and when there is a definite history of traumatism, swelling of the knee may be an accompanying symptom. Röntgenologically the lateral view shows: swelling of the soft tissues overlying the tubercle; erosion, cavitation and fragmentation of the epiphy-

Fig. 11.—Case XII. J. H., showing separation of the epiphysis for the lesser femoral trochanter.

sis; haziness of the epiphyseal line; true fracture of the epiphysis; and lastly deposition of lime salts and union of the epiphysis with the diaphysis.

TREATMENT

In the painful type it is often necessary to apply a plaster knee bandage. In the majority of the cases it is sufficient to apply adhesive strappings every other week until the pain subsides. The above may be combined with the administration of diathermia to hasten the healing process.

PROGNOSIS

It is a self-limiting disease lasting from several months to about one and one half years.

CASE REPORTS

CASE VIII.—S. D.; aged fifteen years; male; schoolboy; was first observed March, 1923, because of painful knees of several months' duration. Onset insidious. Pain worse when running or when walking up and down stairs. No history of an injury. Well developed adolescent male walked about unassisted and without a limp. Both knees present a pretibial swelling. Movements of the knees were free and painless excepting during the last few degrees of extension. There was definite local tenderness of the involved regions. Röntgenographically; the left knee in the lateral view showed an indistinct moth eaten area in the location of the tibial tubercle. No evidence of epiphyseal separation. The right knee; cavitation of the entire epiphysis with a thin layer of calcification indicated the anterior border of the epiphysis; thickening of the overlying soft tissues. The pictures were taken at the time of admission to the clinic. Röntgenograms of August, 1923, showed the presence of well formed epiphyses, but they still showed some mottling. Those of August, 1924, showed the disease to be completely healed.

The knees were strapped every other week for a period of some ten months. Although the pain subsided the process according to the röntgenograms did not return to normal until August, 1924, approximately twenty months after the onset of the affection.

CASE IX.—S. S.; aged thirteen; male, schoolboy; was observed July, 1925, because of a painful right knee of two months' duration. No history of an injury. Examination revealed an overgrown boy walking about with a slight right knee limp, and presented in addition to the above a double knock knee deformity and abducted feet. The left knee was negative both clinically and röntgenographically. The right knee presented a pretibial swelling; tenderness of the painful region and pain referred to the above site on arising from a squatting position. The x ray disclosed a small excavated area the size of a pea with an elevation of the periosteum resulting in a cystic formation. The remaining portion of the tubercle was normal in all respects. The overlying soft tissues were thickened. Patient was treated with adhesive strappings for a period of two months with complete cessation of pain.

CASE X.—E. P.; aged thirteen and a half; male; schoolboy; was seen March, 1925, because of a painful left knee of six weeks' duration. There was no history of recent traumatism. The patient presented the findings typical of the condition under discussion but in addition presented an interesting finding; due to an attack of infantile paralysis during infancy the opposite extremity was weak and on x ray the knee it was noted that there was an absence of the tibial tubercle.

This is significant as it tends to show that the tibial tubercle is a strain epiphysis and requires a certain amount of resistance to cause its appearance.

APOPHYSITIS OF THE OS CALCIS

Here we are dealing with an epiphysis that is subject to constant strain as a result of the persistent pull of the tendoachilles. Traumatism, however, in my opinion, plays but a contributory rôle; for we frequently observe children suffering severe traumatisms to both heel and ankle without an accompanying apophysitis; and again we find the affection in those who present no history of an injury.

The affection is observed between the ages of nine and fifteen years. More frequent in boys, and more often bilateral than unilateral. The onset is usually insidious and may have been accompanied by a traumatism. The patient complains of pain about the heel; walks with a slight limp or when acutely painful may be found to walk on the toes. Objectively the heel is tender both laterally and posteriorly. Dorsiflexion of the foot with the knee extended is limited and painful. Röntgenologically the condition resembles Legg's disease of the hip (a subchondral fragmentation of the epiphysis with an occasional disturbance of the juxtaepiphyseal region and cloudiness of the epiphyseal line).

TREATMENT

Strapping of the foot in equinus with an elevation of the heel one half inch. When acutely painful it might be necessary to apply a plaster foot bandage.

PROGNOSIS

A self limiting disease lasting several months.

CASE REPORT

CASE XI.—E. E.; aged nine years and ten months; male; schoolboy; was observed December 29, 1925, because of painful ankles and awkward gait. Duration five months. No history of injury. For the past two months the left heel had been quite painful causing the patient to occasionally walk on the toes of the left foot. Examination: child of normal weight for height and age, walking with both feet in an attitude of persistent abduction. Movements of the ankles were not restricted excepting dorsiflexion of the left foot. The left heel was tender to touch both laterally and posteriorly. The right heel was tender posteriorly over the epiphysis. The röntgen ray findings were indicative of the condition under discussion.

Epiphyseal separation of the lesser femoral trochanter. The causative agent is primarily one of a sudden strain transmitted to the lesser trochanteric epiphysis through the psoas muscle.

SYMPTOMATOLOGY

The injured is usually able to walk about without assistance, but with a hip limp, the thigh being held in slight flexion, adduction or abduction and externally rotated. Pain is present when walking. With the patient on the examining table, swelling, ecchymosis, and point tenderness in the region of the lesser trochanter are occasionally observed; whereas, Lud-

loff's sign is always found, and is pathognomic. (With the patient in the recumbent attitude, partial flexion of the extended limb is possible due to the action of the tensor fasciæ femoris and rectus femoris muscles; with the patient in the sitting position this action cannot be performed because of the inactivity of the psoas muscle.) Passively movements can be carried out in all directions; extension and abduction, however, may be partially restricted and painful.

CASE REPORTS

Case XII.—J. H.; aged sixteen; male; schoolboy. During the act of running on September 29, 1923, he

Fig. 12.—Case XII. J. H., same hip taken several weeks later revealing union of the apposed surfaces.

was seized with a sudden pain in the left groin. As a result of this he had to stop running. Since then the pain had persisted and the patient had been walking with a decided limp. The boy was in good general condition; walked with the aid of a cane, with the body tilted to the left and anteriorly. All motions of the hip were free, excepting flexion, which was impossible of performance with the patient in the sitting position. Passively all movements were free, extension being painful. There were no points of tenderness, no discoloration and no swelling. Measurements of the lower extremities were equal. The röntgenogram showed the scale like epiphysis of the lesser trochanter to be displaced upwards.

A short plaster spica was applied in the walking attitude and maintained in position for one month. Upon removal of the plaster the patient was found to be able to voluntarily flex the extended lower extremity when in the sitting attitude and was therefore discharged as cured.

X ray taken seven weeks after the time of injury showed the presence of union between the apposed surfaces of the fragments.

Case XIII.—G. S.; aged sixteen; male; schoolboy. November 16, 1923, while playing football and running backwards, stopped suddenly in an attempt to catch the ball. This necessitated a lunge to the left with the left leg on the ground and rotated inwards. Felt a sudden pain in the left groin, but continued to play. That same evening while playing kick the hoop, on kicking the hoop rather forcibly with the left foot, suffered a recurrence of the pain, and this time had to be assisted to his home. Walked about the clinic twenty hours later. Examination: well developed boy walking about unassisted but with a decided left hip limp, with the limb rotated outward. Movements were free in all directions excepting flexion; this being impossible both in the supine and sitting positions. There were no points of tenderness, no swelling, no discoloration. Measurements were equal.

Röntgenogram revealed the presence of a separation of the lesser femoral trochanter.

An adhesive plaster hip strapping was applied reinforced with a flannel spica bandage. This was maintained in position for two weeks. When last seen (December 15, 1923) four weeks after the injury, the patient had completely recovered and the x ray showed the presence of callous formation.

Separation of the anterior superior spine of the

Fig. 13.—Case XIV. S. K., röntgenograph revealing separation of the epiphysis for the anterior superior spine of the ilium.

ilium. While comparatively rare it should be included in this dissertation, as it is the opinion of the author that the condition is more frequent than the literature leads us to believe. When we are trained to be on the look out for this affection, we will find is more often.

Mechanism: most authors agree that the fracture occurs as a result of hyperextension of the trunk on

the thigh. The tensor fasciæ femoris muscle being the strongest of those attached to the anterior superior spine of the ilium, it is the one most active in producing the fracture.

The following case report will help bring out the symptomatology: S. K.; aged fifteen; male; schoolboy; presented himself at the Clinic of the Hospital for the Ruptured and Crippled, May 8, 1924, complaining of pain in the right groin. On May 1st, while running a hundred yard dash, he was seized with a sudden sharp pain in the right groin after traversing one half the distance. This occurred as he raised his thigh and hyperextended the trunk. He stopped running and walked off the field unassisted, suffering excruciating pain; this was somewhat alleviated by having the "leg pulled," as he expressed it. He walked home and remained there until his appearance at the clinic.

Patient walked about without assistance presenting a mild right hip limp without deviation of the body. There were two ecchymotic areas about the right hip, both anterior and posterior to the right anterior superior spine. There was no restriction of motion, although extension and abduction are painful, more especially when lying on the unaffected side. There was a thickening of the parts of the anterior third of the ilium, and immediately distal to it is a small mass, bony in character, about the size of a twenty-five cent piece, tender and adherent to the underlying structures. There was no crepitation nor fluctuation present. Poupart's ligament was not disturbed, although its ilial attachment is tender. Measurements were equal.

Diagnosis of fracture of the anterior superior spine of the ilium confirmed by the x ray.

A low pelvic and hip strapping was applied for two weeks, at the end of which time the patient reported to the clinic, stating that he was entirely well and able to run short distances without discomfort.

CONCLUSIONS

The growing pains of the adolescent may resolve itself into an epiphysitis of the vertebræ; of the diaphyseal portion of the epiphyseal line of the capital epiphysis of the femur; of the tibial tubercle or of the epiphysis of the os calcis.

Traumatism in the preceding plays but a contributory rôle, whereas, in instances of separation of the epiphysis for the lesser femoral trochanter and of the anterior superior ilial spine, traumatism by indirect violence is the sole cause.

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A Statistical Study Indicating the Diagnostic Value of Hyperchlorhydria

WILLIAM W. SAGER, M.D.
and HOWARD R. HARTMAN, M.D.
Rochester, Minn.

The present study, the last of a series of three statistical studies dealing with the diagnostic value of various degrees of gastric acidity, is an analysis of 331 cases of hyperchlorhydria in which the acids varied from 40 to 72. More than twelve hundred cases altogether have been analyzed.

TECHNIC

The technic employed was the giving of the usual Ewald testmeal followed in one hour by withdrawal of the stomach contents and the determination of the content of hydrochloric acid both free and combined, expressed in terms of tenth normal sodium hydroxide solution.

Hyperchlorhydria does not necessarily mean the presence of disease, as Bennett, Rehfuss, Bergeim, Hawk, Carlson and others have pointed out. A degree of gastric acidity as high as may occur in patients is found in certain normal persons who are enjoying excellent health. Bennett believes that hyperacidity exists in five per cent. of normal persons, and says that it seems absurd for anyone to claim that hyperchlorhydria alone is either evidence of disease or an explanation of discomfort. Carlson and Rosemann have called attention to the fact that the gastric glands will not secrete acid in greater concentration than from 0.55 to 0.60.

The degrees of acidity in the aspirated gastric juice vary greatly, in this series from 40 to 72, and it is our purpose to determine the percentage of various diseases associated with hyperchlorhydria.

TABULATION

INCIDENCE OF DISEASES ASSOCIATED WITH HYPERCHLORHYDRIA

Disease	*Cases*
Neurosis	96
Peptic ulcer	55
Cholecystitis	33
Indeterminate diagnosis	20
Chronic constipation	17
Chronic appendicitis	10
No disease	10
Carcinoma	9
Syphilis of central nervous system (1 questionable)	9
Pulmonary tuberculosis	4
Psychoneurosis	4
Essential hypertension	3
Multiple polyposis of rectum	3
Renal tuberculosis	3
Tonsillitis	2

Disease	Cases
Angioneurotic edema	2
Chronic mastitis	2
Chronic pancreatitis	2
Hypertrophied prostate	2
Arteriosclerosis	2
Toxic gastritis	2
Ventral hernia	2
Angina pectoris	2
Arthritis	2
Bronchial asthma	2
No diagnosis (examination incomplete)	2
Stricture of urethra	1
Myositis	1
Epigastric hernia	1
Prolapsed uterus	1
Obesity	1
Adenoma of thyroid	1
Hydronephrosis	1
Lipoma	1
Myalgia	1
Hypospadias	1
Pelvic tumor	1
Cirrhosis of liver	1
Prostatic stones	1
Exophthalmic goitre	1
Colloid goitre	1
Bilateral salpingitis	1
Myocardial degeneration	1
Myelocytic leukemia	1
Otitis media	1
Diabetes mellitus	1
Cardiovascular disease	1
Intercostal neuralgia	1
Entamoeba histolytica	1
Adenomyoma of uterus	1
Pyelonephritis	1
Dysmenorrhea	1
Multiple sclerosis	1
Bubonocele	1
Myxedema	1
Secondary anemia	1

In the present series fifty-five peptic ulcers were found, 16.6 per cent. Of this group forty-two were duodenal ulcers, three probably duodenal, eight gastric, and three gastrojejunal ulcers. The gastrojejunal ulcers followed gastroenterostomy performed in three cases for ulcer of the duodenum. There was in this group of cases a decided increase in the percentage of ulcers over that in the group of cases of anacidity studied, and also over that in the group of cases of hypoacidity studied. In the 492 cases of anacidity ulcer was found in only thirteen. Twenty-eight cases of ulcer were found in the group of 420 cases of hypoacidity.

This comparison shows that there is a gradual increase in the incidence of peptic ulcer as the degree of acidity increases.

Thirty-three cases of cholecystitis were found, which shows a decrease in percentage. In the cases of achlorhydria studied the percentage was 18.11 and in the cases of hypoacidity sixteen, whereas in the present series it was a little less than ten. In the second paper, dealing with hypoacidity, the prevailing views relative to the degree of acidity found associated with gallbladder disease was discussed briefly. Gatewood, in reviewing a series of 192 cases of disease of this organ, noted that achlorhydria and hypoacidity were present in forty-five per cent. Griffiths and Simnitsky have stated that hyperacidity and hypersecretion occur in gallbladder disease.

From the foregoing figures it may be concluded that as the free hydrochloric acid of the stomach increases the percentage chance of associated gallbladder disease decreases.

Nine cases of malignant disease were found, only two of which were carcinoma of the stomach and only one of the sigmoid. They included 1, carcinoma of the sigmoid; 2, epithelioma of the lip; 3, carcinoma of the prostate; 4, carcinomatosis of the abdomen; 5, epithelioma of the cheek; 6, carcinoma of the stomach (two cases); 7, epithelioma of the bladder; and 8, carcinoma of the pancreas. The malignant cases were 2.72 per cent. of the total number, a very marked decrease in percentage as compared with the group with anacidity and the group with hypoacidity. In the group with anacidity there was a 20.53 per cent. chance of associated malignant disease, or an 18.11 per cent. chance of carcinoma of the stomach. The chance of malignant disease dropped to 3.1 per cent. in the group with hypoacidity. In the group with hyperchlorhydria the chance of carcinoma of the stomach is less than one per cent., in striking contrast to more than eighteen per cent. in the group with anacidity.

In ninety-six cases (twenty-nine per cent. of the entire group), various functional complaints of the nervous system had been diagnosed. Eighty-seven such cases were found in the 492 cases of anacidity (17.70 per cent.); 158 in the 420 cases of hypoacidity (37.6 per cent.). It is probable that the acids in the latter cases were higher than revealed by the stomach tube, because fear depresses gastric acidity, as has been pointed out by Bennett, Baird, Campbell, Hern, and many other workers.

It is interesting to note the relative incidence of appendicitis, although the number of cases is not sufficient to draw definite conclusions. In the series of 492 cases of anacidity only four with appendicitis were found, in the 420 with hypoacidity eleven, and in this series of 331 there were ten showing a probable increase in the incidence of appendicitis as the gastric acidity is increased. Bonar found achlorhydria and hypoachlorhydria in fifty-five per cent., normal acidity in fifteen per cent., and high acidity in thirty per cent. of cases of chronic appendicular disease without dyspepsia. In such cases with dyspepsia, however, twelve per cent. showed normal acidity and eighty-eight per cent. hyperacidity, with curves of gastric acidity of the duodenal type. As there were also symptoms of dyspepsia in our own cases the results are in accord.

The diseases in the remainder of the cases are so varied that any deduction is impossible and their association with the condition of hyperacidity is probably only a coincidence.

In this series of cases of hyperacidity varying from forty to seventy, peptic ulcer, cholecystitis, carcinoma and appendicular disease were the diseases most commonly associated, their combined incidence being 32.3 per cent.

An interesting review of a large number of gastric analyses was made in this series by Reginald Fitz, but as additional factors are introduced in his work, such as stasis, concentration of acid, and method of expression of results, a comparison of results would require a long discussion.

CONCLUSIONS

From the results of this series of studies, and of this study in particular, it may be concluded that:

1. The degree of gastric acidity is not pathogno-

monic of any disease, although pernicious anemia never occurs in the presence of hydrochloric acid, and gastric syphilis rarely, also, duodenal ulcer is rare in the absence of free hydrochloric acid.

2. The greatest diagnostic value of a knowledge of the degree of acidity lies in the suggestion carried by the large percentage of carcinomas found associated with the condition of anacidity, their rarity with the condition of hypochlorhydria and hyperacidity, and in the progressive increase in the incidence of duodenal and gastric ulcer with the increase of gastric acidity.

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Treatment of Constipation*

EDWARD L. KELLOGG, M.D., F.A.C.S.
New York

Hale White, commenting upon the surgical treatment of intestinal stasis, remarked that "surgeons in their reports usually state that medical treatment had been exhausted before resorting to surgery but fail to discuss the methods used. This leads to the suspicion that all surgeons are not familiar with the therapeutic resources available to the internist." The reproach may not be unmerited and has led to the following résumé of the subject:

Constipation is the most common of all ailments affecting people of all ages and in every walk of life. It is particularly the bane of those whose occupation is sedentary. Some persons evacuate their bowels only once in two or three days or less frequently without apparent discomfort, but this sluggish state usually causes disturbance of the health and if the intestinal canal is to retain its healthy state for a lifetime it should evacuate its contents daily.

In old age this is important, for premature senility and many of the infirmities of later life result from the toxemia complicating constipation.

It makes little difference whether the bowels act on arising after breakfast or at night so that the habit is acquired and the fixed time kept. Equally important with regularity is the completeness of the evacuation. Constipation is a symptom rather than a disease caused by several quite dissimilar conditions that must be differentiated in order to apply proper treatment.

Usually there is obvious constipation, the bowels moving less frequently and less freely than normal; or residual constipation, the movement being incomplete even though regular, or more frequent than normal. Diarrhea is often constipation in disguise, the frequent loose movement constituting an attempt to evacuate irritating contents.

*From the Department of Gastroenterology, New York Polyclinic Medical School and Hospital.

DIETETIC

Dietetic constipation is diagnosed by the history and the effect of a properly regulated diet. The food may be lacking in bulk and stimulating properties or is actually constipating comprising such articles as lean meat, milk, cheese, toast and cocoa. It may be due to taking too little fluid or drinking water containing an excess of iron or lime salts. The treatment consists of limiting the ingestion of constipating foods and prescribing those that are laxative. Fruit should be taken freely, particularly oranges, grape fruit, melon, apples, pears, prunes, dates, figs; the mechanically stimulating foods as whole wheat, graham and rye bread, bran preparations as bran bread or biscuit, bran served as a breakfast food alone or mixed with some cereal; green vegetables that leave a large residue, as celery, spinach, green peas, string beans, corn and salad vegetables. The free use of butter, cream, olive oil and bacon tends to soften the feces. A glass of cold water or a cup of coffee on arising will stimulate peristalsis. Water should be used freely throughout the day.

HABIT

Habit constipation results from failure to heed the natural impulse for a movement.

As a result the bowels may become unresponsive so that the rectum holds large masses of impacted feces without stimulating the spinal reflex.

The patient is taught to yield promptly to the desire for a movement and to attempt to have a morning stool. The best time is shortly after breakfast as peristalsis is stimulated by food. When at stool avoid concentrating on the desire for a movement.

Rectal dilators are effective in establishing a regular habit of defecation and can be dispensed with when the habit is established. The largest size that

can be used without pain is lubricated, inserted in the rectum and retained until the desire for a movement is imperative.

SPASTIC

In this condition there is a tonic spasm, usually of the descending colon or rectum. It is often complicated with atony of the cecum and ascending colon. The etiology may be found in some point of local irritation, such as hemorrhoids or fissure, colitis or hyperesthesia. It may be a local manifestation of general nervous tension. Drastic cathartics must be avoided for although temporarily effective, they ultimately increase the irritation. The general suggestions above will be useful but the mechanically irritating foods should be avoided. An increased bulk is desirable, however. Medication will be required and foci of local irritation should be removed. Hemorrhoids or fissures should be relieved by appropriate means. A spasm of the sphincter ani may be overcome by dilation under general anesthesia or more gradually by rectal dilators.

Proctitis or colitis should be treated with bland enemas or ointments or suppositories, i. e., solutions of sodium bicarbonate, bismuth subcarbonate in castor oil, olive oil enemas, suppositories or ointment of oxide of zinc, or orthoform ointment. The application of argyrol solution (twenty-five per cent.) through a proctoscope is soothing and antiseptic. If the area of spasticity is above the rectum the regular use of large enemas is helpful. For this purpose use tap water or solution of sodium bicarbonate or boric acid or a mixture of milk and molasses. In the early stages of treatment an enema of olive oil at bedtime retained during the night and a low pressure enema of sodium bicarbonate solution in the morning is effective.

The usual medication is mineral oil or white petrolatum, atropine and agar agar, or psyllium seed. Mineral oil of heavy density is given freely and if taken at mealtime so that it is intimately mixed with the food, a large dose can usually be tolerated. Occasionally the oil will be discharged involuntarily without producing a movement. When this occurs the dose should be reduced or white vaseline substituted. The dose of the oil is one half to one ounce, of vaseline drams one to ounces one half two or three times daily. The dose of atropine may be small at first (gr. 1-500) increased to the physiological limit if necessary. Agar agar and psyllium seed are best taken mixed with the foods, the dose being one or two heaping tablespoonfuls twice daily. Milk of magnesia may be used as a laxative, particularly if there is also gastric oversecretion as often occurs. The dose may be from one dram to one ounce two or three times daily. If taken about one hour after meals it will not interfere with gastric digestion and will correct acidity.

ATONIC

Atonic constipation may result from general asthenia or follow the excessive use of enemata and cathartics or fermenting food. It is frequently a late development of other forms of constipation. The suggestions made for dietetic and habit constipation apply. The diet should be bulky and stimulating since it is difficult for the relaxed intestine to contract sufficiently on a small bolus and the stimulating effect of the mechanically irritating food is particularly helpful. Some benefit may be derived from mineral oil and rectal dilators. Agar agar alone or containing some simple laxative is indicated. An abdominal supporter helps by increasing the intraabdominal tension. Exercises to strengthen the muscles and compress the abdominal contents are useful. Those usually prescribed are as follows:

One: stand erect, feet close together and without bending the knees try to touch the floor with the hands.

Two: lie on the back on the floor with hands behind the head and without bending the knees or lifting the heels sit up.

Three: lie in the same position and try to touch the floor above the head with the toes.

Each exercise is repeated five or six times morning and night. Abdominal massage self applied may follow the exercise. To do this conveniently a leather covered lead ball weighing six or eight pounds is rolled over the abdomen in the direction of the colon twenty-five to fifty times, with pressure applied particularly over the cecum and ascending colon since this is usually the most difficult part of the colon to empty. The routine use of enemata should be avoided for the weak intestinal wall is easily overdistended and peristalsis becomes more sluggish. They may be required for a time because of toxemia but their disadvantages should be understood. Tonics to restore intestinal tone are indicated, i. e., nux vomica or strychnine, glycerophosphate of lime or soda, hydrastis cundurango, quassia colombo; electricity, abdominal or intracolonic; the Scottish douche morning and night (consisting of alternating hot and cold water sprayed over the abdomen and spine. Small dose of pituitary substance (gr. three) are sometimes extremely effective. A single dose of eserine salicylate is often useful but should be prescribed with judgment as it is a depressant.

MECHANICAL

Mechanical defects may be present from birth even though the bowels move regularly and completely. As degenerative changes develop with age, sedentary habits, or disease, the symptoms may first manifest themselves, although frequently the problem is a life long one. It is often a factor in other forms of constipation and may result from inflammatory conditions. With it we are apt to find residual constipation and autointoxication. A knowledge of the points at which mechanical interference is apt to occur and the usual character of the lesion will be an aid to accurate diagnosis.

Delay at the ileocecal junction will be suggested by gas pains and increased tympany at the left of the cecum. The lesion may consist of dilatation of the ileum, prolapse with angulation or adhesions, appendicitis or an incompetent ileocecal valve which may be demonstrated by repeatedly forcing gas from the ileum into the cecum and back again as shown by the shifting area of tympany after manipulation of the abdomen. The cecum may be dilated, movable or prolapsed, indicated by diminished resistance in the right iliac fossa and increased area of tympany, a palpable cecum which may be felt to move readily under the examining fingers or a splashing sound elicited by vibratory manipulation. Obstruction may occur in the ascending colon (Jackson's membrane) or at the hepatic flexure from adhesions or angulation and is

suggested by a history of gaseous distention proximal to this point, tenderness, discomfort, or actual pain, as the intestinal contents are forced past it, followed by relief of symptoms.

Prolapse of the transverse colon causes angulation at the hepatic and splenic flexures and by becoming adherent may create a point of obstruction. This occurs frequently after pelvic operations, the omentum or the colon itself being held down in the pelvis or becoming attached to the abdominal scar. In this condition pressure upward beneath the transverse colon will occasionally cause pain or soreness or a dragging sensation above the pubes or in the laparatomy scar.

At the splenic flexure and about the sigmoid the same condition and symptoms described at the hepatic flexure may be found. Adhesions may bind the arms of the sigmoid loop together or to the adjacent bowel or it may be abnormally long or prolapsed and atonic or caught in adhesions from pelvic inflammation. Frequently there is discomfort, pain or tenderness in this region with alternating tympany and dullness. The stools may be ribbon like or fragmentary. The sigmoidoscopic examination frequently aids the diagnosis.

In the rectum in addition to the spastic condition described above we may find stricture or inflammation or hemorrhoids, or pressure from without caused by enlarged prostate, uterine pathology, or pelvic inflammation or new growths.

The x ray aids in the diagnosis and to its lessons we are indebted for much of our knowledge. It is always valuable for confirmation and frequently is indispensable. It is a mistake to consider the x ray report as always final, however, for the röntgenologist like the clinician makes mistakes. It is likely to be too convincing and may discourage both patient and physician in their attempt to obtain relief from treatment and may lead to unnecessary surgery. The patient's interest is in normal function rather than perfect mechanics and Nature will often solve the problem if the burden is lightened. Moreover, to operate is not necessarily to cure.

All that has been said above about treatment applies in this condition the difference being that we must recognize in the mechanical changes an incurable condition that always predisposes to trouble. The treatment therefore constitutes a life sentence. When there is a relaxed condition of the abdominal walls and much flesh has been lost an attempt should be made to increase the abdominal adipose tissue by a diet of high caloric value supplemented when necessary with a rest cure. The patient is taught to sleep with the foot of the bed elevated about twelve inches, since in this position some of the mechanical difficulties may be relieved. Assuming this position will frequently cause a loose copious evacuation. Bulky and stimulating foods are indicated but because of the tendency to putrefaction and fermentation—animal proteins are reduced to a minimum and the carbohydrates are carefully selected. The bulky green vegetables and those with a coarse residue are important. Bran is taken freely, often two or three times daily. If the stools are dry, mineral oil is used and agar agar containing cascara or phenolphthalein twice daily. It greatly increases the bulk of the stools.

Laxative drugs will be needed such as cascara or other peristaltic stimulants, also remedies to check putrefaction and fermentation or to aid intestinal digestion such as ichthyol, charcoal, sodium phenolsulphonate, the vegetable ferments, or measures to change the intestinal flora such as introducing by mouth or rectum cultures of bacillus acidophilus or bacillus Bulgaricus. Lactose in considerable quantity is a remedy of value and brewers' yeast acts well in some cases.

Residual constipation is apt to be present and will be indicated by offensive stools, intestinal fermentation, coated tongue and indicanuria. To avoid this, it is well to establish a regular castor oil habit. Once every week or two a purgative dose of oil is taken. An occasional mercurial will be helpful by promoting the flow of bile which is likely to be diminished.

Senna, although a mild laxative, is often quite effective in the form of pulv. glycyrrhiza co. or senna prunes. Support of the abdomen is indicated. It should be applied with the maximum pressure above the pubes and iliac crests. The type of supporter chosen will depend upon the shape of the abdomen. The pendulous or prominent abdomen may be supported by an elastic belt but the flat or retracted abdomen will require a special supporter, either that of Curtis Lane or a supporting corset. For temporary use the adhesive plaster belt of Achiles Rose is very effective. We must not lose sight of the fact that if the cecum is prolapsed into the pelvis a belt may do harm by compressing it at the pelvic brim. Abdominal massage and exercises and rectal dilators will be useful.

Enemas may be required. For this purpose the long rectal tube may be dispensed with except in the occasional case in which it is introduced directly into the sigmoid through a proctoscope. The short rectal tube and the knee chest position are desirable, the column of fluid being sufficient to fill the colon. Transduodenal lavage (Jutte) is helpful in the early stages of treatment as it stimulates peristalsis and diminishes toxemia.

In most cases of constipation in the beginning it is advantageous to use several methods of controlling the condition, discontinuing one after another the unnecessary and more troublesome procedures.

In the minds of the laity, the reaction against the injurious effects of strong purgatives and the propaganda in favor of socalled physiological methods has led to a morbid dread of laxative medication which is hard to overcome.

While it is desirable and usually possible to develop normal evacuation by means of diet and exercise in young people, these methods are likely to be only partially successful in those past middle age. Patients should be taught that the evil effects produced by prolonged absorption of intestinal toxines are far greater than those which result from the use of vegetable laxatives. If all the methods fail or they become so burdensome as to interfere with the comfort and efficiency of the patient, surgical treatment may properly be considered.

The procedure will vary since it is a question of the best and least hazardous means of overcoming a mechanical difficulty. Shortening the gastrohepatic omentum, which by lifting the stomach may also draw up the transverse colon; a plastic operation on the ileum to free it from adhesions and anchor it in a favorable position; repair of the incompetent ileo-

cecal valve; appendectomy; removal of constricting bands in Jackson's membrane; plication of cecum and ascending colon; suturing a prolapsed or movable cecum to the posterior abdominal wall; restoration of the hepatic flexure or division of adhesions in this area; resection of cecum and ascending colon; some procedure to support the transverse colon; lowering the splenic flexure or dividing adhesions at this point; dividing adhesions of the sigmoid, sigmoidopexy, resection of sigmoid, ileosigmoidostomy with or without colectomy (rarely indicated); various operations upon the rectum such as stretching the sphincter ani, removing hemorrhoids, dilating strictures; operations upon other organs for the relief of pressure.

THERAPEUTIC SUGGESTIONS

A cup of black coffee or a glass of cold water on arising are good peristaltic stimulants. The free use of water throughout the day tends to soften the stools.

Tobacco is a laxative for many people.

Fruit is more effective alone than when taken with other food. The laxative effect depends upon the bulk of the residue, mechanical stimulation and the laxative salts they contain.

Green vegetables also act by their bulk and mechanical stimulation. They are not so uniformly rich in laxative salts as the fruit (exceptions are tomatoes, rhubarb).

Bran is a good mechanical stimulant. It may be taken as a cereal or in the form of bran meal or muffin or Scotch scone.

The importance of minute subdivision of active substances was known even to the ancients. A smaller quantity of the active substance is sufficient and it is less likely to do harm. The action is more moderate and equable if mixed with an inert substance.

Scamony is useful as a single dose to expel hardened feces. It is an active and searching purgative but it is too irritating for continual use. It is best combined with other drugs.

Jalap is a hydragogue cathartic and is a useful laxative when it is desired to remove dropsical effusions.

Senna (leaves) makes an excellent and safe cathartic, but is likely to cause griping and for that reason is usually given in combination with other drugs. Its laxative properties are derived from salts of cathartic acid.

There are a number of well recognized formulas. The compound liquorice powder has been a favorite preparation for years. The confection of senna is well taken by children.

Aloes (socotrina) is useful in atonic constipation as it stimulates the muscle coat as well as the mucous membrane. Aloin is about three times stronger than aloes and the dose must be calculated accordingly.

Continued use may cause irritation of the colon or rectum. It is best mixed with other less active substances.

Decoction of aloes has an agreeable bitter taste. It was formerly a famous recipe and enters into the composition of valuable drafts prescribed in former times.

Podophyllin is useful in chronic constipation when it is desired to stimulate the liver. It is perfectly suited to some people while in others its effect is uncertain or may cause severe griping.

Elaterium is a drastic purgative. Its use is limited but it may be used in cases in which it is desirable to relieve congestion of the brain or in dropsy.

Croton oil is a drastic cathartic and dangerous if not used carefully. Its particular field of usefulness is in cases that are unconscious as apoplexy. Two drops may be used with enough alcohol to dissolve it and may be given on a piece of bread or dropped on the tongue.

Rhubarb is an excellent purgative. It has been claimed that the aftereffect is constipating but this has not proved a practical objection in my experience. The Turkish rhubarb may be obtained ground and compressed into cakes (rhubarb fingers).

Many patients regulate their bowels by chewing a small portion several times daily, quickly learning their individual dose.

Mixed with bicarbonate of soda it is a useful laxative in digestive derangements.

SALINE LAXATIVES

Most salines act partly as purgatives and partly as diuretics. Some of them act not only by producing osmosis of fluid from the blood because of their higher specific gravity and influence on nerve findings in the mucous membrane, but also in consequence of their being absorbed into the blood and then excreted into the intestines. Salines are more powerful combined than separately and their effect is expedited and increased if taken in warm water.

One of the best is magnesium sulphate. If taken dissolved in warm water, it is more promptly effective, combining nitre with it makes it an excellent diuretic also.

Carbonate of magnesia is very mildly laxative producing a soft movement without irritation. Because of its antacid properties it is an excellent laxative when we are dealing with hyperacidity also or in spastic constipation. It is valuable in infancy and childhood and is effective for many adults.

Sulphate of soda or Glauber salts is milder and less disagreeable than epsom salts.

Phosphate of soda is a mild purgative for both children and adults. It may be given advantageously in broth or soup and may be continued for a long period without unpleasant results. Its continued use seems to have an inhibitory effect in chronic rheumatism.

Rochelle salt is laxative and diuretic. The organic acid in this salt like citric acid becomes changed in the system to an alkaline carbonate making the urine alkaline.

Seidlitz powder is a refreshing effervescing saline laxative.

The numerous laxative mineral waters are—most of them—effective in proportion to their percentage of sodium or magnesium sulphate.

Cascara sagrada is useful in the treatment of chronic constipation. It acts as a stimulant to the muscle coat, but may irritate the mucous membrane.

Castor oil is an excellent purgative and is valuable in combatting toxemia. It is thorough and has a soothing effect on the mucous membrane but the after effect is constipating, and this must sometimes be corrected by giving a saline laxative on the succeeding day. It is effective as an enema and is suited to all ages. There are many remedies for covering the objectionable taste—coffee, fruit juices, whiskey, fluid extract sarsaparilla, or liquorice, etc.

As good a method as any is to rinse a glass in ice water, put an ounce of ice water in the glass, float the oil on it with a layer of water above and take it at a single gulp. Another method which is a favorite in some hospitals, is to put in the bottom of the glass the juice of an orange, above this the oil, and add a teaspoonful of soda bicarb. Stir and drink while effervescing.

DUODENAL IRRIGATION

This is a valuable method of treatment when the patients are toxic. It is usually given once a week or more frequently in suitable cases. The method has been described by Jutte. The tube is passed into the duodenum and the medicated solution is introduced through it producing a prompt and thorough cleansing effect upon the entire intestinal tract.

TAMPONS

By using a sigmoidoscope the sigmoid may be directly medicated by tampons saturated with appropriate remedies. This is useful when dealing with a local or limited lesion. Suppositories offer an easy means of medicating the rectum and are efficient in suitable cases.

Ointments have a limited field of usefulness in the treatment of constipation. In lesions of the ano rectal margin such as fissure and hemorrhoids they are of considerable help.

Vibration and electricity applied abdominally or with one electrode in the rectum are useful adjuncts to other treatment.

Enemas may be given for their stimulating effect, to relieve spasticity by their soothing effect, or by neutralizing organic acids, or to introduce helpful bacterial cultures into the colon. The long rectal tube may be dispensed with since it is mechanically irritating and not necessary. The knee chest position is best but lying on the back or left side with the hips elevated is sufficient. Occasionally it will be found desirable to introduce a long rectal tube directly into the sigmoid through a proctoscope.

If an enema is warm, introduced slowly and with little pressure it is possible to give it thoroughly with very little discomfort particularly if it is interrupted at first to allow the expulsion of gas. The same rule applies in administering irrigations. With care in regulating the temperature, the pressure and flow of the solution, permitting the expulsion of gas and fluid at the first suggestion of pain, and then continuing the introduction of the fluid, it is possible to thoroughly irrigate even a very sensitive or irritable colon. The y tube, a straight rectal tube, a container for holding a sufficient quantity of fluid, the various connections and receptables for catching the fluid comprise the only necessary equipment.

CONCLUSIONS

Constipation may be grouped under the headings: dietetic, habit, spastic, atonic and mechanical constipation.

Treatment may include diet, exercise, massage, electricity, abdominal support and indicated drugs. Most cases can be best treated by using a combination of several methods. Mechanical constipation does not necessarily require operation. The x ray examination should be accepted as only part of the evidence and should not discourage attempts to cure by treatment.

Operation should be considered only after the failure of other methods.

Note on Hypoglycemic Reactions During Insulin Treatment

With Report of a Case

A. V. GREAVES, M.B. (Tor.)

Nassau, Bahamas

Our knowledge of the exact mode of action of insulin upon the human organism, together with the details of intermediate carbohydrate metabolism, are not so well known that we can afford to neglect the evidence that clinical observation of cases under close control may offer us, and it will be largely by the accumulated clinical experiences of many different observers that our knowledge of the best practical application of this potent extract to the alleviation of diabetes mellitus will be arrived at.

The somewhat unusual features of the case detailed in this communication seem worthy of record.

Case.—The patient, C. S., a man forty-five years of age, gave a history of having been under a physician's care in 1921 for diabetes and having followed a modified diet in the interval with some amelioration of symptoms until January, 1923. At this time his thirst, polyuria and other symptoms became again noticeable and he was referred to another physician for treatment.

After preliminary strict dieting he was placed upon small doses of insulin (which was then available in small quantities in Toronto) and apparently improved markedly in a clinical way, although still showing occasional slight glycosuria. He was taught to select, calculate the value of and weigh his diet daily and passed out of control on a diet containing carbohydrates 78, protein 100, fat 180, with fifteen units of insulin twice daily. From this time (October, 1923) until the date of his coming under my care (December, 1924) he said he felt and looked so well that he became careless and ceased weighing his diet and testing his urine as he had been taught to do.

On December 26th I was called to see him and found him in a state bordering closely on coma. His breath was heavy with acetone, his respiration of the Kussmaul type and he was drowsy but could be roused sufficiently to answer questions in thick, slurred accents. His lips were dry and cracked and his tongue a beefy red. He showed definite edema

of the face and pitting could be demonstrated over both tibiæ. The temperature at this time was normal, but his pulse was 110.

ANTECEDENT HISTORY

His immediately antecedent history was difficult to obtain, but as far as I could gather he had not been quite well for about six days, having had a head cold; but for the three days previous to being seen he had vomited frequently and had kept practically nothing down. He had taken no insulin since beginning to vomit. He complained of no headache, but his vision was so blurred that he could see little more than outlines. A blood sugar estimate showed 0.51 g. per 100 c.c. and his urinary sample contained five per cent. sugar and gave a strongly positive test for ketone bodies and a marked reaction for albumin. Microscopically there were a few white blood cells and many granular casts.

TREATMENT

He was given forty units insulin immediately by hypodermic injection and removed to hospital, where he received five hundred c.c. ten per cent. glucose with forty units insulin by vein. On the same evening he was given a further five hundred c.c. glucose by Murphy drip and thirty units of insulin. On the following day he only vomited once and was markedly improved clinically. From this time he was fed by mouth. His fasting blood sugar was 0.47 per cent.

He was sufficiently well on January 3rd to return home with a nurse and at this time was receiving three doses of insulin daily before meals, totalling 140 units with an intake of carbohydrates 50, protein 45, fats 45. His twenty-four hour urinary sample showed two per cent. sugar and a marked ketone reaction. The fasting blood sugar was 0.30 per cent., but examinations made at various times in the afternoon of the two days preceding showed as low as 0.09 per cent. sugar. The urinary albumin and casts had completely cleared up. The slight edema noted at first was still present and remained for six weeks after the onset of the illness.

HYPOGLYCEMIA SYMPTOMS

It might be well to note here that this patient was thoroughly familiar with the symptoms of hypoglycemia, having experienced mild reactions frequently when first being placed on insulin treatment; he was moreover warned at this time to be on the watch for symptoms of reaction and a glass of orange juice and glucose was at all times beside his bed so that he could apply the appropriate treatment without a moment's delay by merely stretching out his hand for the glass. Such precautions were considered advisable owing to the high insulin doses employed.

On January 6th his urine showed three per cent. sugar during the after breakfast period but was free for the rest of the day. A blood sugar was arranged for the following day but unfortunately could not be carried out.

On January 7th his urine was sugar free for the whole day except for a trace one hour after luncheon.

At 9 p. m. on this day, three hours after patient's evening meal with forty units of insulin, I was called urgently to see him as he was thought to have fainted. I found him quite unconscious in a hypoglemic state. As he was quite unable to swallow I injected ten min. 1-1000 adrenaline chloride hypodermically; this caused the swallowing reflex to return in about three minutes. Glucose was then fed to him until he returned to consciousness, which was complete about five minutes after he commenced to swallow.

THE ATTACK

The history of the attack was as follows: his sister was in the room with him when he asked casually for a drink of water; she poured it out immediately but on turning to hand it to him found him practically unconscious and unable to swallow.

He stated to me afterwards that he had not the slightest recollection of the occurrence. There can be no question of the overwhelming suddenness of the onset of the symptoms and the patient's genuine surprise when he became aware of the nature of his attack.

RÉSUMÉ

On thinking over the case in an effort to account for the sudden lowering of the blood sugar (after a glycosuria on the previous day) I recalled the fact that ever since coming under my observation he had shown a persistently rapid pulse although his temperature was never over 100. I had been unable to account for this and the point only obtruded itself after the occurrence detailed above. The whole picture I believe to be explained by supposing the initial coma to have been due to the supervention of an infection (an acute cold or influenza) in addition to careless dieting, with a consequent marked loss of carbohydrate tolerance; the later state of hypoglycemia being due to the sudden development of immunity to the infection (the ordinary process of recovery) with the equally sudden regaining of a high level of tolerance. Both the normal temperature and the high pulse rate in this case was later made clear to me by Campbell's observation that in marked diabetes with high blood sugar levels the elevation of temperature normal to an infection is frequently absent and in this way the presence of such an infection may escape detection; the pulse, however, does show the proper increase commensurate with the severity of the infection.

The lesson to be learned from a case such as this is that in grave diabetic crises the frequency of the pulse rather than the degree of temperature should be taken as the guiding sign pointing to the presence of an infection; also that increased carbohydrate tolerance may follow closely upon the subsidence of infection, even to the point of suddenness, and for this reason close attention should be paid to such patients if on high insulin dosage in view of possible sudden hypoglycemia consequent on the subsidence of an infective process.

It may be of interest to mention that this patient's pulse returned to normal a few hours after the occurrence of the hypoglycemia.

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The Use of Sedatives, Tonics, Endocrines, Etc., in the Reeducational Training Treatment of the Epileptic

L. PIERCE CLARK, M.D.

New York

(*Concluded from page* 156)

I have so thoroughly detailed these principles in other papers that I need not reiterate them. Suffice to say that when a proper setting for the individual patient is supplied and all his natural demands and interests are adjusted, he has his best chance to recover.

Before we leave the subject of sedatives in treating the epileptic seizure epoch, it may not be out of place to note other uses for them; that is, their value in differential diagnosis, in separating the epilepsies from hysteria, and their use in indicating the degree and kind of epilepsy in the particular case. It is fairly well known that sedatives are of little or no use in repressing hysterical convulsions, and they have no enduring value in warding off epileptiform attacks in organic or symptomatic states which simulate essential epilepsy. Chloral is of much more value than the bromides in this latter respect, and in my experience the administration of luminal is even better than chloral in organic epilepsy. In a given case of essential epilepsy it is often desirable to measure experimentally the severity of seizure outlet which the individual finds essential, as it were, to square himself with his disordered wellbeing, for many epileptics seem to require a rhythmic seizure frequency, and by carefully graduating the dosage one may determine how much sedation the individual case may require to materially dislodge the periodicity of attacks and extend the free interval. If the seizure frequency of a certain epileptic requires a high dose of sedatives, say ninety to one hundred grains, we may then conclude that he is severely epileptic. Nor is the advantage of the use of bromides confined to such instances. Often in severe grand mal, by purely repressing the attacks one may so slow down the convulsive discharge as to recover the initial departure of the discharging area in the motor cortex; in many instances where the aura once present was later lost or swallowed up in the rapid advance of the seizure, this phenomenon can be recovered by the process of gradual repression of the onset of the seizure. Again, the maximum advantage, perhaps, is to be gained in the partial suppression of the attacks as a whole and to note the content of the mental state or behavior disorder induced by the sedatives (2).

When we return to the reverse aspect of drug medication in epileptics we pass naturally from a negative to a positive phase of treatment. We realize that there are few drugs that signally help us, as our main dependence is placed upon natural remedies to increase the health of the whole organism. In other words, we not only abandon sedatives for the seizure epoch but we also repudiate the entire principle of the previously assumed nature of the malady itself—that it is a disorder in which the seizures are the sole or main symptoms.

In theory and to a certain extent probably in actual practice, certain epileptics ought to benefit and perhaps have benefited by the use of ordinary *tonics, alteratives,* and other *reconstructive medicaments.* Physical therapy in its various forms is eulogized and there seems to be no reason why drugs should not have a place. Thus we should expect to find mention of iron, codliver oil, arsenic, strychnine, phosphorus in various forms, and so on. But in the literature of epilepsy such drugs are mentioned only in the most meagre fashion. In the collections of drugs found in the exhaustive reference works of leading epileptologists they are almost ignored and in the treatment recommended by the scores of writers of textbooks on neurology and in special journal articles the same silence prevails. Arsenic is usually mentioned only as an antidote to bromides. A few have recommended strychnine in tonic or increasing doses apparently for the neurasthenic component in epileptics. Occasionally there may be mention of glycerophosphate of lime. Such drugs are mentioned only in the most casual fashion. If iron were given there would be evidence of some form of anemia and the drug would be used with reference to improving the blood counts. If strychnine or arsenic were given there would be cases showing the mode of increasing the dose, the symptoms indicating approach to the limits of tolerance, the gain in weight or other check on the salutary action. Unfortunately, then, many of these have been given no adequate trial as they are only too frequently employed to ward off the evils of a bromide sedation. Thus handicapped, they have nevertheless shown themselves to possess no little virtue to assist in improving the functions or structure of the epileptic economy. If they are combined with stimulation therapy, such as special gymnastics, hydrotherapy and proper foods, their efficacy may be signally increased. Nor should the temporary increase of frequent seizures deter one from advancing such a drug therapy, especially when colligated with other principles of physiotherapy. In fact any well authenticated drug that will materially increase the physiologic effectiveness of the epileptic economy should not be despised. Had as much experience and stress been placed upon this aspect of the medication therapy of epileptics as upon the less constructive bromide sedation, we should not have found ourselves so defenseless in meeting the present situation of drug administration. In this same category one may mention the long series of interrelated mishaps that so naturally result in the epileptic's weak economy. Often the irregularities of digestion are not primary but rather are due to the neglect of a naturally weak function and the consequent inroad of noxious bacteria; the remedies in this special category are legion and are usually combined with physiotherapy. A few may be cited. Their employment in the epileptic economy is not essentially different from

their use in nonepileptics, and the reader may refer to special works on this subject in general. Here, again, theory and practice are at fault, however. We find little concerning the state of the stomach in the epileptic. The absence of normal acidity is believed to be one of the factors which favor intestinal putrefaction and which render it unwise to give putrescible animal protein, but we find few analyses of stomach contents involving large hospital material. Strychnia is sometimes found mentioned as a tonic for hypomotility of the stomach. The chief dietetic resource in epilepsy being the salt free regimen, this when employed automatically excludes other measures. This is also true of the vegetarian and milk diets sometimes used. When the epileptic is on a strict diet of any sort the need of medication recedes. One reason for the inutility of stomachics for many epileptics is the common habit of bolting the food and of rapid eating in general. Unless this habit can be corrected in some fashion it could avail little to prescribe medicines. Another and still stronger one is the action of the bromine on the stomach, this element tending to replace the chlorine of the hydrochloric acid. It is known that when large amounts of bromine are ingested daily the elimination of chlorine from the body is so extensive that the stomach secretes hydromic acid instead of hydrochloric acid. It would appear that under the use of luminal and perhaps some other anticonvulsive remedies in use when given to replace the bromides the stomach chemistry would be much less interfered with so that drugs might be exhibited with profit for the improvement of the gastric functions. The custom of giving small doses of bromides in various dyspepsias with a neurotic element is of course unavailable in an epileptic under bromide medication.

The success of such medicaments in the hands of skilled physicians accounts in no small degree for many epileptics being found in the hands of such specialists rather than epileptologists. Excluding the food faddists, an equal number may be found rightly in the hands of practical dietitians. Unfortunately the one sidedness of such otherwise excellent therapy fails of its final goal. It is thus found that even a weak system of special drug therapy in which the totality of the epileptic economy is given consideration, there is much to be gained.

Endocrine therapy.—While much under this head is both vague and fanciful it is certainly indicated in any epileptic with noticeable evidences of endocrine disorder to administer one or more of the following thyroid, ovarian and pituitary preparations. Apparently adrenalin is contraindicated in all cases and the others may be dismissed as inert or doubtful despite theoretical indications based on physiology. In certain conditions of endocrine nature in epileptics in which there is an excess of some secretion there would also be a contraindication. Thus in all disturbances which point to the hypophysis an x ray of the base of the skull should be taken and if there be an acromegalic component pituitary extract should of course be withheld. In such cases, moreover, it is a question whether the epilepsy be not due to the increased intracranial tension which proceeds from the presence of the enlarged hypophysis. This would not strictly speaking be an endocrine case at all but would be symptomatic epilepsy from cerebral tumor. The state of the sella seems to furnish the clearest indication for any endocrine preparation and when found to be small, pituitary extract should be given with thyroid, the latter being usually added to the other endocrines, as pituitary and ovarian substances. Thyroid and ovary may be used when they seem indicated unless some contraindication is present.

In regard to suprarenal extract, it is claimed that adrenalin can induce convulsions in an epileptic (3). Convulsions appear out of the regular schedule in from one half to two hours in about two thirds of all tested. The surgical reduction or unilateral extirpation of the suprarenal glands has been practised extensively for the past few years in extremely severe cases as a last resort to arrest the convulsions. The intervention is formidable and after brief successes the cases have a tendency to relapse.

There are considerable variations of the bony formation of the sella turcica in epileptics (4). Comparative studies of this region in health and disease are still to be made. We are soon to face, however, the problem more definitely and solve its bearings on epileptic states. The issue will be, not so much upon the significance of the relationship which sella deformities may have to the cerebral content itself, as the bearing the variation has upon the possible alteration of function of the posterior lobes of the pituitary bodies, and the rôle this defect or alteration of function may have upon convulsive disorders of epileptics in particular. Posterior lobe extracts have been long since used in the therapeutics of epilepsy independent of any special indication other than the strong feeling that some deficiency of the ductless glands lay at the foundation of the disease.

All *physical practices,* such as compression of a limb, slapping or blistering the extremity to which the aura is referred, etc., have little or no use in preventing an epileptic attack. There is practically no effective treatment of the attack when once it is initiated. At the onset of the paroxysm one may prevent tonguebiting by placing some article—usually a handkerchief or some part of the patient's clothing—between the teeth. The patient's collar should also be loosened. The presence of someone sleeping in the same room may prevent strangulation in nocturnal attacks by the patient lying on his face.

Electricity.—Direct applications of the electric current may indirectly benefit epilepsy in a very small number of cases by benefiting the patient's general condition.

Hydrotherapy.—In selected cases hydrotherapy is beneficial to epileptic patients. It often does good by relieving the effects of bromide intoxication. It can only benefit the epilepsy through the favorable modification it induces in the patient's general condition. The methodical tests made by Fleury confirmed this fact.

Influence of concurrent diseases.—De Montyel and Dide thoroughly investigated the relationship between malarial infection and epilepsy in severe cases. While they do not deny an apparent improvement under such an infection in some cases they cite fourteen instances followed by grave results. In no instance were they able to say that the epileptic attacks disappeared with the appearance of malarial faver. These writers agree with Féré that the chances for

improvement are too uncertain to warrant the utilization of bacterial products in the practical therapeutics of epilepsy.

The author with Dr. A. E. Sharp studied five cases of measles and seven of erysipelas occurring in epileptics at Craig Colony. The result of our study showed that in not one instance was the preexisting epilepsy favorably modified for any great length of time.

Antiautointoxication treatment.—Much has been written on the socalled antiautointoxicants in epileptics. In spite of the fact that one theory after another has been exploded, the belief that there is something radically wrong in the epileptic soma persists, and the clinical sense of the rightness of this surmise will not down. Is the epileptic fundamentally incapable of final combination of food stuffs and does his metabolism seriously suffer as a primary fault; or is it due to his physical handicaps induced by his advancing disease? We do not know; only time and further studies in this field will clear this point. A few would seem to be worthy of empiric trial if upon no other grounds.

Study of authorities appears to reveal that only certain types of epilepsy are accompanied by and perhaps determined by an autotoxic state of the stomach and intestines. This type is recognized by Voisin and others. Akin to it is the type of the disease in which attacks of overeating or improper eating seem to be required to elicit convulsions. The bulimic epileptic who habitually bolts his food may be another in which there is a bond between the state of the gastric functions and the expression of the disease. But aside from these types it does not appear that epilepsy is a matter of gastroenteric autointoxication and the theory and practice of Reed and his followers in finding intestinal stasis as the essential factor in epilepsy is not scientific. A gastroenterologist (Bastedo) states that there are but three things to do in connection with the gastroenteric functions of the epileptic in general. First limit the intake of animal or vegetable food which is putrescible including meats, eggs and legumes. Raw eggs are thought to be especially bad. Second, empty the colon but only by the use of laxatives, cathartics being contraindicated because they so accelerate peristalsis that the albumin has no opportunity for normal digestion and the more readily putrefies. Third, the liver should be stimulated in its various depurative functions although no technic is given to produce this result.

There have been several radical plans of treatment based on the principle of antagonizing autointoxication, such as starvation and the surgical treatment of intestinal stasis including resection of the bowel. In its mildest form, bearing in mind the gluttonous tendencies of many epileptics, this idea is carried out by restricting the diet to easily digestible food, cutting out meats and alcohol and in general by a course of personal hygiene of the digestive organs. Sometimes a more strict vegetarian regimen has been tested, and the salt free and salt poor diets, in addition to making possible reduction of the dose of bromides, may be visualized as well calculated to antagonize intestinal autointoxication.

It is claimed that actual *starvation treatment* has been tested in institutions at various times and that Guelpa, the originator of the starvation cure of diabetes, tested the same principle on epileptics but without sufficient success to warrant an extended report of the experience. Recently an osteopathic practitioner obtained some prominence by favorable reports which attracted much attention in lay circles. Several neurologists in the United States and Canada repeated the experiment and while the immediate results were in some cases strikingly favorable, the seizures returned so soon as the patient went back to eating a normal amount of food. It is at present uncertain whether or not occasional periods of fasting will be able to modify the course of the disease.

Low protein diet.—The views of neurologists on the ill influence of a high protein diet in epilepsy show great variation. Some would apply the low protein diet only in a certain group of epileptics with evidences of intestinal autointoxication, while others would subject all epileptics to it to be on the safe side. We find the statement without reference that at one of its sessions the Psychological Association of great Britain and Ireland made the meat diet in epilepsy a subject for open discussion and that the consensus of opinion was in favor of a meat poor diet. On the other hand extensive researches by Cuneo, an Italian laboratory investigator over many years of the metabolism of epilepsy, dieted one series of epileptics with a regimen consisting almost wholly of meat while another series received a meat poor diet. Contrary to all expectations the high protein diet seems to have reduced the number of convulsions while the carbohydrate diet had the opposite effect. It seems that the latter favors the development of an acidosis which in its fluctuations has an intimate connection with the development of critical and periodical manifestations. He therefore recommends both the cutting down of carbohydrates in the diet and the administration of alkalies. It does not, however, appear that he recommends the high protein diet which would doubtless in any case be expensive even if harmless.

Opium-bromide treatment.—My first illuminating experience was with Flechsig's opium bromide cure. It will be remembered that this system had many strong adherents both in this country and abroad, due, perhaps, to its inception by one of the then prominent neurologists at Leipzig. In many instances the defunct methods of curing epilepsy have had similar origins, such as the Brown-Sequard remedy which in its day was supposed to be a sure cure.

Opium was recommended in epilepsy by Paracelsus in the fifteenth century. Opium alone is seldom used in epilepsy. While its power to suppress the attacks temporarily may not be questioned, its danger in other respects is great. Flechsig (1893) originated a method of employing opium and bromide in conjunction in epilepsy. He recommended this treatment only in chronic cases in which the bromides alone had failed, and cautioned that the patient be carefully watched during the whole course of treatment. The treatment has been extensively used in Germany in cases in which the ordinary bromide and other forms of medicine have proved unsatisfactory, which means that a large proportion of such cases are eminently chronic and refractory. It is selfevident that so heroic a plan of treatment would not be undertaken unless there was urgent need of it and unless a certain percentage of the patients can improve under it.

The patient is virtually turned into an opium eater and then, while still suffering from abstinence symptoms, is poisoned by massive doses of bromide; after which he goes under an ordinary conservative bromide cure, like the majority of his fellows. The patient is under the influence of opium for six weeks or more and the dose is progressively increased until he is taking in the neighborhood of one gram daily, when it is suddenly discontinued. Numerous patients do not suffer during this part of the cure and readily adapt themselves to the increasing doses, but others, as the drug is pushed, show numerous by-effects and it is the custom to keep the ordinary patient in bed on a soft or fluid diet and to give him constant care along the lines of personal hygiene including daily bathing.

In regard to the rationale of the treatment, opium is an ancient antiepileptic remedy which was driven out, prematurely perhaps, when the bromides were introduced. Moreover, opium is a valued remedy in all of the depressive psychoses and hence the treatment is thought to be indicated especially in epileptics with depressed psyche. Over this component the drug seems to exert a beneficial action, while the bromides themselves tend to increase the depression and maintain it. It is known to psychiatrists that morphine alone cannot replace opium in this connection, the improvement in the mental state being due to the association of morphine with some of the other alkaloids of the drug. While an accurate dose of opium is maintained throughout, the state of the pupil is the true means of control; for the drug must not be pushed to the point of the pupils becoming too contracted and insensible. At the sudden suppression of the opium with the patient doomed to some days of withdrawal symptoms, bromides are substituted in daily doses of ninety to 135 grains, with the result that bromism is very apt to develop. According to Binswanger it is at times almost impossible to distinguish whether the distressing symptoms of this period are due to the withdrawal of the opium or the overaction of the bromides. However, the latter drug, with the soil prepared by the opium cure, exerts a profound action on the nerve centres, and in a week the patient, who has now recovered fully from the opium withdrawal, begins to feel greatly improved. The large doses of bromides are now replaced by relatively small ones and upon these the patient remains indefinitely. The attacks in favorable cases have been reduced notably in number and severity and the mental state is much benefited. A second Flechsig cure may be undertaken at any time although this course is not usually followed.

Not all of the patients thus treated are of the type just outlined. Some of them are vigorous and have relatively few seizures. This type of patient resists the opium and it may not be necessary for him to go to bed during the treatment. Not a few children, some of them extremely young, have received the treatment despite the fact that children are intolerant to opium. The dosage is, of course, much smaller and to offset the small doses the child is kept under the influence of the drug for a much longer period than the adult.

The verdict of those who have tried the method is almost uniformly unfavorable, including Donath, Dohme, Landois, Luske, Kathe, Homen, Liehen, Warda, and Bratz, as well as my own experience. Bratz in the treatment of forty-six cases met with three cases of status epilepticus and several cases of severe mental depression (Gowers). Some writers report more favorably and uphold the statement that the treatment of Flechsig is of value for many patients, especially in old and obstinate cases when all other agents have proved ineffectual (Church and Peterson).

In this connection the occasional effects of morphia in epilepsy should be mentioned. Bad effects are apt to follow when the period of epileptic coma happens to coincide with the sleep induced by the morphine. Gowers mentions a case in which an epileptic about to undergo a surgical operation was given ¼ grain morphine to relieve great pain. As the drug was beginning to take effect, the patient had a seizure and immediately passed into profound coma that rendered artificial respiration necessary for an hour.

Chloretone.—The results of chloretone are not unlike those of Flechsig's treatment. When pushed to as high dosage as seemed safe it lessened frequency and severity of attacks. Coincidentally it caused marked somnolence, headache and vertigo. In most cases six grains three times a day is sufficient.

Crotalin is stigmatized as dangerous by the American Medical Association while the daily press has been much used in its publicity campaign. Numerous epileptologists have tested the remedy and statements are common that the strong claims of the venders are not sustained in any respect.

Brown-Sequard treatment.—This consists in giving small doses of mixed bromides combined with iodides for a period of two years without any attempt to increase the amounts of drug during this period. The bromides used comprise the potassium, sodium and ammonium salts with the iodide of sodium and ammonium. At the same time the patient receives a tonic of strychnia and dilute sulphuric acid after meals. The daily use of bromides was a little over one dram, one half of which was taken at bedtime and the other half divided before each meal. Despite the small and nonincreasing dose, good results were reported at the end of the period. The object of the small dose was to prevent the evil of bromism. The treatment possesses only historical interest, although the custom of giving mixed bromides is still in general use. The plan was of course well suited to the exigencies of private practice when the disease could be managed in the patient's home.

PRINCIPLES

From all the foregoing, what are the outstanding principles which underlie the physical treatment of the epileptic? First the attempt to treat the disease process itself based upon some suppositious theory of its causation, visceral, endocrinic or metabolic and the like. Inasmuch as these theories of causation rest upon the slenderest foundations they ought by and large to disappear from daily or even occasional use as they are doing, but unhappily for the welfare of many an epileptic, not sufficiently rapidly. The great majority of the remedies rest upon a more secure rationale if not upon a more successful one, that is upon the basis of suppression or sedation of the disease process as expressed in the fit and its cogeners. Supposing for the sake of argument one postulates the most highly prized physical concept of

the disease, that it is a cerebral affection cortical in origin and that the actual tissue lesion is a form of marginal gliosis either primary or secondary, and that the fits are in some way a periodical expression of this enduring process in the cortex; what use can the sedatives be in such a problem? No one pretends to say that bromides can favorably influence a cortical gliosis. That would be quite absurd. When, then, should this remedy be given? Simply because we are groping in the dark and have found a temporary means of magically suppressing the periodic fits, we imagine we have rid the patient of the disease process. In following this fallacious empiricism we are but practising a false procedure and are really entitled to little more respect than the patent-medicine vender. Again, we are not alone in this odious burden, for the relatives and the patient himself demand we shall above all suppress the periodic occurrence of attacks. If we shall not allow ourselves to be stampeded into a course of inquiry and therapy that is a glaring shame to all concerned, then we must go deeper and build better in a knowledge of the cause and remedy of the individual case. While we may not clearly say that bromides increase the disease, we do know that so far as we can comprehend the nature of the disorder that the symptoms of the bromides are similar in their action to the disease process itself and it stands to reason that their administration is really more harmful than good. An absurd cart-before-the-horse principle is still in evidence in the prevalent belief that the fit in itself induces degeneration and that the bromides in temporarily checking the frequency of the fit really deter deterioration. Aside from the use of bromides for diagnostic or emergency purposes they should be entirely discarded in the treatment of epilepsy. What are their chief or alleged attributes for a continued therapy in epilepsy? It is said they quiet and tranquillize the patient and in that manner lessen the stress of life for him. How much better this can be accomplished by understanding the epileptic's individual problem, his opportunities and his handicaps and thus help him to revisualize them and make his peace from within naturally and not by a chemical substitute.

In conclusion, we may say that the drug treatment at best fulfills little, least of all to promote an enduring arrest of the seizures in epileptics, and when one who has this complete goal in view feels that in itself any drug is a failure, he is not far from the truth. This is especially true if a sedative plan solely is followed but combined with other supportive treatment the picture is less gloomy. The maximum of drug advantage is secured if they are employed as adjuvants to an otherwise more embracing therapy. The greatest and surest permanent benefits are obtained when sedation is held to the minimum and supportive and restorative remedies are mainly employed. Even then the vanishing rôle of drugs in the treatment of the epileptic is broadly stayed, for the dawn of a better system of therapeutics is well on its way, indicated in the more dynamic aspects of treating the epileptic organism *in toto*.

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Neurosis and Total Personality*

FRANZ ALEXANDER, M.D.

Berlin

(*Continued from page* 166)

They also had the foreboding that this disease had a purpose which was to loan some justification to the asocial isolation of the patient. That many a physician believed that nothing ailed the neurotic and treated her with impatience and lack of sympathy, is the reaction to this unconsciously understood secret meaning of the disease. The pure fact of suffering therefore acquires the greatest economic rôle in hysteria because therein the material sense of the symptoms often falls short of the need of punishment.

In the nosological limitation of the neurotic character I have described a similar regularity. While the neurotic in his symptoms is alike unmoral and overmoral, his character in its conduct of life is alternately near to criminalistic and suicidal. He does not live his aggressions and his social tendencies in symptoms but in actions, although in contrast with the criminal he does not look forward to retribution on society but is himself his own judge.

Just as impulsively as he has yielded his asocial tendencies he resigns, although unconsciously, tendencies in difficult situations of life and he himself is the secret director of the tragic justice of his fate. He acquires, as did one of my patients—thanks to his impulsive lack of inhibitions—great wealth in order with his iron regularity, under pressure of conscience, to lose it again with equal rapidity. Then the play began again, prosperity and poverty alternated in his existence and from the same motives, just as certain neurotics show manic and melancholic periods.

I have been able to study this significant and regular association between the desire for punishment

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and repressed psychic content most clearly and in all its details transparently in dream pairs and dream series which often recur in the same night. Since my article on this subject, published in Vol. XI of the *Internationale Zeitschrift,* the number of examples of such economically associated dream pairs has greatly augmented. I would like to repeat only the result of my investigations. Very often among these dream pairs one is a dream of punishment while the other is a specially distinct wish dream (often a pollution dream) with ego foreign content. The economic connection between both is extremely close and consists of the fact that the punishment dream makes possible the occurrence of the wish dream, since through the punishment dream the desire for punishment is immoderately satisfied, and the repressed tendency, free, often hardly masked—for the censor is no longer disturbed by moral scruples—can come to expression. In other cases again the succession is inverted. After a distinct wish dream with ego foreign sense, a moral tension—so to speak—persists, which is led off into a punishment dream. I would like to express this thus—just as a man with an unsatisfied repressed wish cannot, with a bad conscience sleep tranquilly. The bad conscience which possesses just such dynamic power as an unsatisfied wish must first, in its sense of justice, be satisfied with a punishment dream in order not to be disturbed further in sleep. This is the simplest explanation of the punishment dream.

However, life often furnishes a crass confirmation of this regularity. A neurotically diseased person was run over and badly injured by an auto through a misdeed with intent directed against his own person. On the next day not only was his depression gone but hatred against his father, long held in check, broke through unrestrained. "Now I have paid for all," he said, "now I will speak my mind freely to my father." He at once would demand his inheritance from his father. The suffering which he had undergone removed all bounds from his repression, the selfpunishment delivered him from all feeling of indebtedness towards the father, which until now had inhibited his aggression. The debt had been paid by suffering.

In a patient with a severe compulsion neurosis of ten years duration spontaneous recovery set in when he secured from a relative a subordinate and poorly paid situation and by strenuous work was able barely to support his family. This relative who stood in the centre of his guilt complex and was bound to him by unconscious envy (a repetition of the father conflict) duly made the most of his masochistic devotion. So long as he supplied the work of a slave he was free from every symptom and fell ill only when his luck had turned and he had become independent and had attained a materially and socially advantageous status. His conscience did not grant him the free, careless life, but sought after punishment, hitherto his lot, and when this failed him provided the neurosis. In such cases one really obtains the impression that the neurotic inescapably bears his cross in some form.

Thus are explained the sublime results of healing of the evangelists—the sick men have been freed from the oppressive feelings of guilt. Christ, who assumed the guilt of all mankind, freed it from suffering. In the soul guilt and suffering are inseparably united. The moral centre may be called a specific centre of force, a dynamic factor and in order to understand mankind we must become acquainted with its expressions, just as with the expressions of repressed impulses which are inhibited by this moral centre. Freud gave the classical formulation of this fact in the sentence "that the human being is not only more unmoral but more moral than he himself believes." The consideration of mankind from the purely libidinous side gives a one sided picture. If my assertion proves to have been correct that the neurosis, and indeed every neurosis, rests on the pathological relation of the repressed instance to that which is repressed, the special knowledge of this disturbed relationship receives an eminent therapeutic importance.

The first comprehensive essay based on the ego theory of Freud to present the importance of the wish for punishment is the admirable work especially serviceable for the development of the ego physiology by Reik (*Confession-compulsion and Punishment-need. International Psychoanalytic Library.* No. XVIII).

Reik sees in the compulsion to confession a compromise performance between the urge for expression of the repressed and the need of punishment. The confession is an avowal of guilt and leads to punishment. The particularly interesting result and the finest psychological observation of his investigation is that the criminal with his open avowal of the sin to the inner psychic judge, the superego, which is secretly conjoined with the repressed tendencies, substitutes for the external judge and therewith accomplishes the stride to society. But the symptoms of the neurotic in so far as they signify a confession hidden although miscarried, for the entourage unintelligible, contain at least the effort to renounce by this selfbetrayal, the asocial shutting off. With the confession one refrains from bare criticism of one's superego and exposes himself to criticism by his fellow man. Even if our feelings according to Reik overvalue the confession character of the neurotic symptom—the compulsive neurotic for example betrays his symptoms unwillingly—his activities signify an essential deepening of the psychology of the neuroses.

The type of these relations allows itself to be reconstructed on a basis of the quite crudely presented facts of the neurosis and dream doctrine. Especially the dream pair, but also the build of the symptoms of compulsion neuroses, the economic importance of suffering in hysteria, the periodicity of manicdepressive conditions, the turns of fate of the neurotic character force upon us the sense of this connection. The overmorality, the overausterity of the neurotic conscience stands so in the service of repressed tendencies that the punishment required by it, the suffering, the masochistic contrary sense of the symptom, furnish the moral justification to the eruption of the suppressed. Its overausterity and injustice inwardly, which so much limits the action radius of the neurotic in life, leads to an overheated, revolutionary atmosphere in the soul. The neurotic symptom is an attempt at disburdening which stands closer to the claims of the it.

(*To be continued*)

Practical Therapeutics

Psychological Factors in the Treatment of Disease, with Especial Application to the Treatment of Paralyses in Childhood*

HENRY KELLER, M.D.
New York

(*Concluded from page* 150)

The boy, on the other hand, will choose more hazardous games looking for an outlet of greater energy, more courage and more combativeness. The plays most dear to the heart of all boys are running, jumping, climbing, skating, wrestling, flying kites, building bonfires, etc.

It is in the selection of the varieties of games and in the methods of approach that the ingenuity of the physician displays itself, and upon this depends whether the attempt will be crowned with success or prove to be a dismal failure.

Even natural tendencies of childhood can serve as a guide and aid in restoring some lost function resulting from injury at birth, i. e., Erb's palsy or obstetrical paralysis of arm.

FIG. 3.—S. G. Baby, aged thirteen months with Erb's paralysis of right arm engaged in active calisthenics.

Vilhelm Rasmussen (11) in his interesting work dealing with child psychology, when speaking of movements in the child, calls attention to the fact that though the hand movements of the quite young infant are entirely indeterminate and spontaneous, it is also easy to provoke reflex movements. If one lays a finger in an infant's hand, it curves the fingers together, closes the hand, and it has relatively great strength in its fingers for it often can hang by them, supporting the weight of its body. The child also closes its feet, if one may use the expression, when one places a finger beneath the toes. Such action can be seen in a child in the first few months. From the spontaneous or reflex movements with the hands there is a steady transition to uncoordinated and badly controlled but voluntary movements, and thence on to well coordinated, surely controlled, voluntary movements, as when, for example, the child grasps its feeding bottle with both hands and guides it to its mouth. Such function can be seen present in a child of about six to seven months.

That these functions in childhood which are natural can be induced to serve our purpose can be seen by all without further elaboration.

NATURE OF TOYS

Children seem to be peculiarly susceptible to bright colors, musical instruments and objects in motion. For female children—a doll colored and which makes a sound when squeezed is very acceptable. A rubber ball suspended and in motion is attractive to both sexes, and will usually elicit a response in children of very young age. A musical instrument in need of winding up in order to elicit sound or one in need of a stick to touch the keys in order to create music can be used with advantage. "According to available experience," says Rasmussen (12), "babies, as a rule, have a great feeling for song and music."

Other important considerations in need of elucidation before their significance can be grasped are

DISTANCE AND COLOR PERCEPTION IN CHILDREN

Baldwin cites experiments conducted on his own child, since the child was nine months old, with reference to the determination of distance and color perception, and he tabulates his findings as follows:

The colors range themselves in the order of attractiveness—blue, red, white, green and brown. Disregarding white, the difference between blue and red is very slight compared with that between any other two. Brown seemed to be as neutral as could well be. White, on the other hand, was more attractive than green. The newspaper was, at reaching distance (nine to ten inches) and up to fourteen inches, as attractive as the average of the colors, and even as much so as the red. At fifteen inches and over the newspaper was refused in ninety-three per cent. of the cases, while blue was refused at that distance in only seventy-five per cent. and red in eighty-three per cent.

FIG. 4.—M. K. Had infantile paralysis of inverters of both feet grasping a tinker toy with his big toes.

The child persistently refused to reach for anything put sixteen inches or more away from her. At fifteen inches she refused ninety-one per cent. of all cases, and ninety per cent. of color cases, and ninety-three per cent. of newspaper cases. At nearer distances we find the remarkable uniformity with which the safe distance association works at this early age. At fourteen inches only fourteen per cent. of all cases refused, and at thirteen inches about seven per cent. There was a larger percentage of refusals at eleven and twelve inches than at thir-

*Lecture delivered at the University of Bellevue Hospital Medical College February 5, 1926, under auspices of the Neurologic and Orthopedic Departments.

teen and fourteen inches when brown was in the group of the former. Brown was refused considerably when more than ten inches distant. The fact that there were no refusals to reach for anything exposed within reaching distance (ten inches) other attractive objects being kept away, shows two things, 1, the fine estimation visually of the distance represented by the armlength, and 2, the great uniformity at this age of the phenomenon of motor suggestion upon which this method of child study is based.

Fig. 5, a, b.—M. G. Nine years old. Infantile paralysis of left arm, illustrating play method of stimulating shoulder and arm muscles to function.

These conclusions are based upon the results of 217 experiments. Three of these were with five colors and 106 with ordinary newspapers.

The application of the above rules in my own cases, suffering from Erb's as well as infantile paralysis, has been of immense benefit to my patients and of great interest to me.

Before commencing my treatment I make it a rule to test the distance of response of the normal and abnormal limb for comparison. Color and sound attraction and general responses.

The observation as to whether the visual or auditory sense is more developed is of great importance, and the games are devised accordingly.

The animistic tendency of early childhood (the tendency of the child to imbue inanimate objects with life) is another of those habits which can be easily made good use of in treating children up to four years of age. In boys, animals to play with are preferable, and even rubber balloons of all fantastic shapes, and representing all kinds of creatures belonging to the bestial kingdom, will be welcomed by them.

The tying and bandaging of the normal arm to the body and then urging the child on to catch a toy with the affected arm is a very effective way of stimulating a partially paralyzed limb to activity. In attempting to interest the child in the various games and to get the child to benefit most by them, the following rules must be understood:

The child is peculiarly susceptible to the appeals of change, novelty, chance, or happy suggestion, and often the failure to respond to a stimulus is due to distraction, or to discomfort, rather than to the lack of intrinsic interest.

Fatigue should be avoided and the first sign of restlessness or loss of interest on the part of the child should give us a warning to stop.

Baldwin gives the following sound advice: that after each effort or two the child should be given the object reached for to hold, or play with for a moment; otherwise, he grows to understand that the whole affair is a case of makebelieve.

The response of the child depends upon the physical condition that it finds itself in, and any change from the normal should be a sign to postpone the treatment for a time more opportune and when the child will be in a more responsive mood.

In conclusion, I feel that Ely's advice with reference to the examination of a child suspected to be suffering from tuberculosis of a joint shows very forcibly the need of the knowledge of psychological principles in relation to the child, and deserves to be repeated verbatim.

"As a rule," says Ely (13), "all necessary manipulations can be made with the slightest amount of pain or with none at all. It is not advisable to strike the patient forcibly upon the head or heels. There are some children (and some parents) so refractory that their examination will always be unsatisfactory, but if one uses tact and patience one will find their number very small. Sometimes a postponement to another day will soothe their fears. One should make it a rule never to inflict pain on a child if it can possibly be avoided, and never to deceive him, especially if he is to be seen again. Frequently a running fire of remarks well interspersed with questions will divert his attention completely. Occasionally a child is met who objects strongly to the removal of its clothes, but if the clothes are admired and an inspection of them be requested, he will part with them readily. Most boys resent the title of "My little man."

Once a child's confidence is gained, the rest is easy.

A child is the most tractable creature if one learns how to handle him, and to know the child's mind is the most essential part of our mental equipment in the treatment of disease.

In conclusion I want to express my appreciation to R. H. Sayre, Edward D. Fisher, and David E. Hoag for their courteous cooperation.

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498 West End Avenue.

Anticonsumptive Therapeusis.—R. Hervé (*Lancet,* January 17, 1925) believes that, setting aside all treatment by drugs, among which the doctor, nevertheless, will often find helpful tools, at the present time all pulmonary tuberculosis cases where suppuration occurs as revealed by the ear or the screen—or even where the disease is in rapid evolution—should have recourse to a Forlanini operation. Pulmonary compression will work wonders, provided that it be properly carried out. To achieve this purpose, and in order to make up for any possible insufficiency of compression, the author inaugurated the method of dividing pleural bands. But, besides such surgical measures, the simple and fundamental methods of treatment must never be overlooked—namely, rest, open air, and sunshine.

Historical Medicine

Skin Pathology in Ancient Medieval and Modern Times

SAMUEL GORDON, M.D.

Philadelphia

The theory of evolution and involution governing the entire universe is not a product of recent conception and adoption. The ancient philosophers anticipated it, the scientific investigators have had a mental perception of it, and the students of natural history have been perfectly acquainted with it.

A beautiful allegorical expression in the Talmudic literature, characterized by its condensation of language and depth of thought, suggests fairly well the belief of the men of those days in the above named theory. Elijah, the prophet, was asked, "What is the Eternal God doing?" and his answer was, "The Eternal God is sitting and building worlds and destroying them." Note that the passive verb "is sitting" denotes that the Eternal is not hurrying and indicates the immense periods of time consumed in the process of evolution and involution.

The antronomer sees the construction of celestial bodies in the unresolved nebulæ or cosmic vapor and the destruction of planets and comets in the meteors and asteroids.

The geologist perceives a similar process in the aqueous and igneous rocks. He counts fourteen systems between the Laurentian rocks, the oldest on earth, and the Alluvium ones of the present time.

The botanist attributes this theory to every member of the vegetable kingdom from the thallophytes to the flowering plants.

The zoologist finds the same process in the animal kingdom from the protozoa to the mamalia and man.

The historian relates of nations and governments following the periods of development, fastigium, and decline.

The physician observes the same rule almost in every disease afflicting the human being.

It is, therefore, very logical to deduct that the same process equally applies to the disease producing microorganisms. In other words, bacteria that have produced certain diseases in ancient times are not existing at present and vice versa.

To prove that such is actually the case I will discuss several diseases bearing the title "leprosy." I shall consider leprosy of the Bible, lepra Arabum and lepra Graecorum.

LEPROSY OF THE BIBLE

The septuagintal translation of the disease *zaraat* described in the Levitical text by the term leprosy has been a misfortune. It has caused much confusion in the medical world. Almost every dermatologist was more or less under the impression that lepra or elephantiasis arabum and lepra græcorum are akin to the leprosy of the Bible. Even some of the modern dermatologists are still under this erroneous impression. A question which seems to have puzzled every dermatologist arose—how the garments, leather goods, and walls of houses came to partake of the infection of leprosy.

Gregory Hostius, a famous physician of his time, makes an attempt to cover this naked ignorance with a religious mantle. "As the Supreme Being did grant unto the Israelites very particular blessings and singular privileges so did He punish their ingratitude and abuse of His favors with very severe and singular judgments."

Dr. J. F. Schamberg, a famous dermatologist, in his fascinating contribution to the *Jewish Encyclopedia,* under the term leprocy describes the following four cardinal symptoms of the disease *zaraat* mentioned in the Bible.

1. Bright, white spots or patches on the skin, the hair of which was also white.
2. The depression of the patches below the level of the surrounding skin.
3. The existence of "quick raw flesh."
4. The spreading of the scab or scale.

He further expatiates on the differentiating points between this disease and modern leprosy and proves very logically that the two diseases have nothing in common.

Finally, he comes to the conclusion that "the white spots, upon which so much diagnostic stress was laid, were in all likelihood those of vitiligo, a disease quite common in tropical countries and characterized by bright, white spots the hairs on which also become white." But why should a noncontagious disease such as vitiligo be isolated? He answers this question in the following words, "There is much reason to believe that the segregation of lepers was regarded at any rate at certain periods more in the light of a religious ceremonial than as a hygienic restriction. *Zaraat* was looked upon as a disease inflicted by God upon those who transgressed His laws, a divine visitation for evil thoughts and evil deeds." "Lepers were obliged to remain outside the camp because they were regarded as likely morally to infect others."

The writer of this article finds it absolutely impossible to associate the *zaraat* of the Bible with vitiligo. The reasons are as follows:

1. Vitiligo is characterized by milky white patches; *zaraat* is a snow white lesion. Almost every place in the Bible where *zaraat* afflicting man is mentioned, it is specified "white as snow." Exodus Ch. 4, V. 6: "And the Lord said furthermore, unto him (Moses) 'Do put thy hand into thy bosom' and he put his hand into his bosom; and when he took it out, behold, his hand was leprous, white as snow." Numbers Ch. 12, V. 10: "And the cloud departed from off the Tabernacle; and behold, Miriam became leprous, white as snow." Kings 2, Ch. 5, V. 27: "May then the leprosy of Naaman cleave unto thee, and unto thy seed forever, and he (Gehazi) went out from his (Elisha's) presence a leper as white as snow."

2. The literal meaning of the Levitical text describing the second symptom does not indicate depression of the patches below the level of the surrounding skin. It signifies a deeper involvement, a penetration of the lesion to the muscular tissue beneath the skin. Similar to the disease "leuce" described by Hippocrates and Galen in which the chief diagnostic feature of its contagiousness was based upon the involvement of the muscular tissue. Furthermore, the primary lesions of *zaraat* were *seet* and *baheret*. The meaning of the first is an elevation, the formation of a papule or a nodule. How then, can there be an elevation and a depression at one and the same time? "Baheret" in a macule, which has neither elevation nor depression.

3. Vitiligo or leucoderma is usually slowly progressive in its course and seven days or a fortnight would show absolutely no change. *Zaraat* was a rapidly progressing disease. The examinations are prescribed to be made at intervals of seven days each.

4. Vitiligo is very rarely cured, while *zaraat* was a curable disease. When the leper was cured, he was ordered to bring offerings to the Lord.

5. Vitiligo is recorded separately in the text as a noncontagious disease. Leviticus Ch. 13, V. 38 and 39: "And if there be a man or a woman having in the skin of their flesh bright spots, white, bright spots, And if the priest do see and behold there are in the skin of their flesh bright spots, pale and white, it is a freckly eruption grown in the skin; he is clean."

If the segregation of lepers afflicted with *zaraat* was not a hygienic restriction and the adjective tame (unclean) denotes only that the leper has transgressed the laws of God; if such be the meaning of *tame* then we have to assume that the swine, the camel, the hare, the coney, and the fishes without fins or scales, forbidden to be eaten because they are tame, means that these animals have transgressed the laws of God. Shame on them.

The worthy contributor corroborates his statement by bringing evidence of four cases mentioned in the Bible who have transgressed His laws and were punished by *zaraat,* namely, Miriam, Joab and his family, Gehazi and King Uzziah. A cross examination of these cases reveals just the reverse. Miriam uttered disrespectful words against God's chosen servant, Moses. So did Aaron. Numbers Ch. 12, V. 1: "And Miriam and Aaron spoke against Moses." Why was not Aaron afflicted with *zaraat?*

Joab and his family were cursed by David with leprosy for having treacherously murdered his great rival Abner. We do not find in the Bible that this curse has been fulfilled.

Gehazi provoked the anger of Elisha by his mean covetousness. It is more reason to believe that Gehazi attracted the disease through the garments he received from Naaman. (Kings 2, Ch. 5, V. 23.)

King Uzziah attracted leprosy because he sacrificed incense on the *Bamah.* His father Amazyah and his son Jotham did the same. In fact this was the custom of those generations. All the people of Israel have practiced the same, yet no one else attracted leprosy.

The Bible placed *zaraat* in the same category with *zab* (specific urethritis), and pronounced a verdict of excommunication upon the person afflicted with it because it is a contagious disease similar to the contagious diseases which require isolation at the present time.

A thorough crystallization of the Levitical text translated into modern medical language reveals the following description: *Zaraat* is an acute, subacute or chronic, highly contagious and infectious disease characterized by the appearance of snow white macules, papules, nodules or scales (*Sapahat*). The exciting cause is probably a fungus of high virulence acting upon individuals whose resistance is below par.

The virus enters the blood stream, multiplies and forms emboli which deprive the part of its vascularity, thereby producing a least resistance in the tissue affected. The action of the liberated toxin upon this debilitated tissue manifests itself by converting the natural pigment into a snow white appearance involving skin and hair. As the disease progresses, the lesion extends to the muscles below, new lesions are formed and in the severe type a spongy morbid excrescence is developed. Two types are mentioned in the Bible:

An acute type which runs a comparatively short course and terminates either by recovery when the patient's resistance is good, or by death in debilitated persons. The first two symptoms—the color of the skin and hair, and involvement of muscular tissue—were sufficient to pronounce the case contagious. In the cases where the muscles were not afflicted and the hair did not turn white, the diagnosis rested mainly upon the spreading of the lesions to other locations. (Leviticus Ch. 13, V. 1-8.)

The chronic type was diagnosed by the formation of "quick raw flesh." In this type there was no involvement of the muscular tissue. The breaking out of the disease in other parts of the body without forming quick raw flesh was not considered contagious. (Leviticus Ch. 13, V. 9-17.)

Zaraat had a predilection for scar tissue, especially scars of wounds and burns. The scalp and bearded region were occasionally involved. The symptoms in these cases were similar to those described above except that the scalp cases were yellow in color and in healed inflammatory spaces the lesions and hair were of a reddish white color. (Leviticus Ch. 13, V. 18-58.)

There was one type of *zaraat* which had a favorable prepossession for linen or woolen garments, leather goods and walls of houses. The Bible terms this fungus *zaraat Mameret.* It was very virulent and capable of attacking susceptible persons through mere contact. The ordinance prescribed in the Bible to burn the garment and destroy the wall contaminated by *zaraat Mameret* is sufficient evidence of its high virulency.

The origin of *zaraat* is obscured. Its period of development must have been in the prehistoric time. It reached its fastigium during the dynasty of the Pharaohs of Egypt; at the era of the Bible the disease began to undergo its period of decline and at the time of the Talmud the disease was extinct.

The Talmudic literature discusses several noncontagious diseases entirely different from the *zaraat* of the Bible. They link their diseases with *zaraat* because of their traditional custom to link all their teachings, advices and moral sayings with certain passages of the Bible.

(*Continued on page* 231)

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Importance of Pathology in Prevention of the Diseases of Childhood

DWIGHT M. LEWIS, M.D.

New Haven, Conn.

The importance of pathology in diagnostic medicine is not to be questioned: its use in the interpretation of signs and symptoms, for diagnosis, for treatment, and at the postmortem table as well is fundamental. Pathology as applied to preventive medicine is a little studied art. That it is as fundamental in preventive medicine as in diagnostic medicine may be definitely shown. Its recognition has been neglected for two primary reasons. The one is that standard public health practice even at this time recognizes that with some exceptions the spread of the communicable diseases of man centre entirely upon the case, missed or otherwise. A discussion of an exception is to the point. One may read recent health department bulletins from such a viewpoint. It is stated in the *New York City Health Department Bulletin* for January 2, 1926, that typhoid bacilli in typhoid carriers are the exception to the well known fact that "germs while actually producing disease are apt to be more virulent than while they are simply resting in the carrier stage." The reason given is that there is some actual disease of the lining membranes of the gallbladder and the bile ducts. To apply pathology to diphtheria and scarlet fever carriers as I have shown is to make no exception to typhoid and as in typhoid to demonstrate that the spread of those two diseases like typhoid radiates in the main directly from the carrier. The second primary reason in the neglected recognition of pathology in the prevention of communicable diseases is directly related. Bacteriology has been applied to the diseases of known etiology to demonstrate by the absence of the infecting organisms in the invasive or secretory discharges the termination of the disease as infective for others. To study in the field, the pathology of mucous membranes of cases and carriers of diphtheria and scarlet fever as has been done by surgery in the case of the gallbladder and ducts in typhoid cases and carriers is again to create harmony. In the sphere of communicable diseases of unknown bacteriological etiology also, current day practice in preventive medicine recognizes the presence during convalescence of socalled pathological discharges of importance in the termination of isolation. It is fortunate for the epidemiologist that the mucous membranes used for culture tests may be studied by the epidemiologist in the case of diphtheria or scarlet fever, in fact in all the respiratory diseases as contrasted with typhoid fever. The error lies very directly then in the viewpoint of the bacteriologist (as well as with the epidemiologist directing his work from the usual office desk). The viewpoint is well expressed in the health department bulletin previously quoted. It is as follows: "Cases of diphtheria can give rise to disease where carriers cannot for the reason of the enormous supply of germs present in the case." To follow in the pathological field the usual case and carrier of diphtheria is to find such a statement erroneous. Faucial diphtheria in the membrane stage will only too frequently fail to show the invading organism when cultures are taken from the membrane or from the throat secretions. Only when cultures are taken from beneath the presenting membrane are the best results secured. Should the case be laryngeal a total absence of organisms is the usual in cultures unless taken directly from the larynx. If on the contrary, there presents the usual picture of bilateral nasal discharge of the moribund or near moribund neglected case where there has been extension from the primary faucial lesion, one may sensibly as well as with a pathological appreciation of conditions, feel that in the latter instance we have to deal with the enormous supply of germs as is reasoned by the laboratory worker for any case of faucial diphtheria. Further, to follow actual cases of the disease whether reported or missed I may state that it is the rule that no spread of the disease arises in the family or in contacts until after the case has become a nasal carrier of convalescence. I have repeatedly called attention to the fact that whether case or carrier, positive throat cultures of themselves (of late years confirmed by virulence tests) are not followed by further cases. Early in our work we found that here and there among contacts of cases were to be found individuals with unilateral excoriating nasal discharges in no wise distinguishable from those of convalescent diphtheria. It was, however, to the point that these latter individuals were recent cases whereas the former indi-

viduals frequently gave no history of previous sore throats and had had the discharge for weeks even months. Had I not been familiar with the two sets of pathological nasal conditions, I should have, as it was my experience that physicians in general were very fearful of the similar nasal involvement of children convalescing from measles or less frequently from the other minor communicable diseases of childhood as indicative of diphtheria in the light of a positive laboratory report. I should, like the attending physician, even with normal throat and negative threat cultures have given, as I have seen physicians give, fifty thousand and more units of antitoxin without effecting the nasal discharge. And herein lies a further fallacious laboratory teaching of the day not borne out by field experience.

It is taught that a virulent diphtheria bacillus in passing from normal throat to normal throat gradually loses its virulence and only under such an unusual opportunity of being present in the throat of one developing measles or scarlet fever is diphtheria apt to develop. The field experience that is recurringly true whether measles, chicken pox, or other communicable disease of childhood is prevailing is that during or following convalescence of an individual in the family or in a neighborhood from measles par excellence, a well member of the family or a well contact of the convalescent case of measles develops diphtheria and the source of the latter disease may be found, as I have repeatedly shown, to be due to the nasal carrier convalescent from measles. Indeed, I have been able to show that a nasal carrier with negative virulence had a positive virulence during convalescence from an intercurrent attack of measles and was the cause of a case of diphtheria in an older brother, himself immune to measles. As is standard practice in typhoid prevention, the primary aim of prevention is the search for and the identification of the diphtheria carrier. I have found a further analogy with typhoid fever. As with that disease, the hedging in of the comparatively small number of carriers is a much more economical procedure than immunizing the entire population against the disease. Equally in both diseases it is a more responsible board of health procedure. In that diphtheria is essentially a contact borne disease as compared to the frequency with which typhoid fever is secondarily a water or food borne disease, immunization in both diseases is resultful mainly in the socalled upper classes. In diphtheria, as all will grant, it is with the lower classes so called that we have to deal. It is of little less importance in responsible prevention to remember that immunity in diphtheria is obtained only after upwards of a minimum of three months and in upwards of ninety-five per cent. of the children.

With years of experience one often has rather vivid "mind pictures" called into review in comparing responsible methods. The following one is ever recalled whenever I read that the prevention problem no longer is one of school age but lies dominantly in reaching the children from the age of one to five. During the closing months of a three years demonstration in a model health centre in the city a Schick test contest was held for school and preschool children. Upwards of 500 school and upwards of one hundred preschool children were given one or more preventive immunization doses of toxin-antitoxin. Before six months had elapsed, two children, both under age one, one each in two families, were dead of diphtheria. In each of the two families every other member of the family had been given a certificate either of immunity or immunization. In one family two such individuals were nasal carriers, one with a positive virulence. In the other family a single nasal carrier was found. The point at issue is that at the time of the Schick contests both of the children now dead were under six months of age and the mothers had been advised to wait until they had come "of age." With a morbidity of 107 and a mortality of fourteen for the year for this district called B, I would compare a similar metropolitan district A, of the city where nasal carriership was the essential routine. Both districts had had for years comparable morbidity and mortality rates. In district A for the first time I had during the year the entire services of one nurse. The morbidity in the district for the year was sixty and the mortality rate was two and five-tenths; rates gained in advance of any Schick testing in the district.

I have a further picture to paint as regards responsible health department preventive measures. It is recalled by the demonstration of a film on diphtheria prevention shown by a metropolitan city. With a child dead of the disease an inspector is seen ringing all the doorbells in the neighborhood, broadcasting the fatal event, the immediate need for diphtheria immunization, and where it may be obtained. In our city a film if made would show a nurse ringing doorbells but requesting to see all the children, looking for sore throats or missed cases, and nasal carriers. Any absentees are requested to be at the home the following half day or may be looked up at another address. The epidemiologist's history of the case often leads him to direct another nurse to a distant part of the city where immediate previous contacts may yield the causative carrier and rather immediately prevent further diphtheria cases in that area, otherwise untouched by the standard film. Whether the cultures taken to the laboratory are few or many, immediate and accurate results are to be gained in the prevention of diphtheria by application of pathology in the field under medical direction.

Statistics may well enter into the interpretation of some of the claims for diphtheria prevention by educational or Schick testing resultful campaigns. Today, Auburn, New York, is widely quoted as a proven instance of elimination of the disease as a result of a campaign in 1923. With a reduction in mortality from thirty-three in 1922 to five in 1923 and two and seven-tenths in 1924, there is no count made of the morbidity which for the respective years was 270, 120 and sixty. If we go back to 1908 we find that that city had a mortality rate of three and in 1912 one of five and seventh-tenths, with unknown morbidity rates. Since 1910 when morbidity rates are known the year 1912 shows one of twenty-eight. The city has a population slightly less than the cosmopolitan section of our city, district A, where I gained for 1923, as I have previously mentioned, a mortality of two and five-tenths in advance of any Schick work. Auburn's problem in 1925 was then one of reaching the preschool age for immunization. My annual report for the same year showed that

diphtheria cases under age five had been reduced thirty per cent. over the previous year as compared to the age group five to sixteen, where the percentage reduction was twenty-five. An outstanding fact was that of the entire content of three deaths for the city, one was in a temporary non-resident with infection gained without the city, one was a case of scarlet fever, and the third was in the age group five to sixteen. The outstanding fact was that for the first time on record, based on strictly residents and local infections as were under our jurisdiction, we were, in advance of educational Schick testing in the preschool age, without mortality in the age group under five years of age. In 1924, by the entire services of one nurse in the previously called health centre district B we obtained fifty-one per cent. of the total carriers for the year, obtaining a morbidity rate of sixty-four and a mortality rate of three and two tenths. In 1925 with a forty-two per cent. of total carriers corraled in the district we obtained a morbidity rate of ten and a mortality rate of zero. In that other comparable cosmopolitan district A for 1924 we reduced the morbidity from sixty-four to forty-two and the mortality from two and five tenths to zero. In this latter mentioned district, with approximately eight thousand grade school and four thousand preschool children, eleven hundred odd school and approximately ninety preschool children were immunized during the first half year. It may or may not be true that the procedure had an influence among those of school age: it is rather manifestly not true of the preschool age.

One may further read in the recently published annual report of New York City for 1924 that the Schick work for the results theorized in 1918 were not definitely satisfactory. To chart the yearly mortality rates by boroughs for that city from the year 1900 through 1925 reveals similar downward trends of mortality for the various boroughs for the periods 1900-1909 and 1910-1925 in terms of epidemic measles. Manhattan with a record mortality of eight and the Bronx with one of four in the year 1923, both went back over ten for the year 1924, a year of epidemic measles. The injection of pathology into diphtheria prevention has, in my twelve years of field experience, shown the interelation. With a minimum personnel of instructed nurses, epidemic measles in 1922 in this city was pathologically handled in five sixths of the city, resulting in not only cutting the *lowest* recorded diphtheria mortality rate in the city's history in half, but in continuing to yearly decreases as compared to the usual variations of increases during and following measles years.

Finally one may well reflect on the comments made in the 1925 annual report of Springfield, Mass. A record morbidity rate for diphtheria for the year of approximately fifty and mortality rate four and two tenths, "represents the effective cooperation of the medical profession in taking cultures from all suspected cases and using antitoxin immediately." "If toxin-antitoxin had been generally used, the forty-two per cent. reduction in cases would be so attributed." Unmentioned is the fact that the mortality rate was less than half of the next best records of 1911 and 1915, when the rates were approximately ten.

The application of pathology in diphtheria prevention will demonstrate the comparatively small number of carriers (previous articles on the subject netted us a two tenths per cent. carriership among the school population as compared to the usually published two per cent. where pathology was not mentioned) and promiscuous cultures, mainly throat cultures, were taken from groups of individuals and the results applied to the entire population. It is significant that rather generally over the country such procedures have resulted in a two per cent. carriership, although when virulence tests are carried out but one in ten of such show positive virulence. The end result is then the same figure as ours.

FORMER WORK

Ten years ago I published an article on scarlet fever showing the evidence at hand from field investigations that in nowise dissimilar fashion to diphtheria there were nasal carriers of convalescence and chronic carriers who had had the disease previously but at the later period were subjects of or convalescents from other intercurrent communicable respiratory diseases. 1. In the succeeding years I published articles giving the evidence that such nasal carriers of scarlet fever could be identified by a certain morphological streptococcus and related instances of where its use for diagnosis as well as for the control of an institutional epidemic was most satisfactory, 2, followed by an article showing the need for the differentiation of the various streptococci so usually found in throat cultures, 3. It was of import for not only identifying cases and carriers of true scarlet fever but for identification of cases and carriers of simulated diphtheria and scarlet fever. In a recent article, 4, I have been able not only to confirm the findings, but have as well, the definite explanation of the varying tides of socalled complicated specific diseases. Convalescent nasal carriers of socalled grippe were the common source of succeeding more virulent similar respiratory infections among contacts, and as well were the common source of severe, even fatal complications of scarlet fever for example, among nonimmune contacts when the carrier showed the further evidence of being a scarlet fever carrier also. It is little short of disconcerting to find how simple may be the explanation of the wherefor of simulated diphtheria in the case of a family where I was recently called in consultation by the attending physician. With mother and one young daughter ill with septic sore throat, a single look at the third member of the family, an older daughter, was to me, reasonable evidence of the source of the infection. The latter individual presented a unilateral purulent nasal discharge with excoriation of the upper lip, as pathological to look at as were the septic sore throats of the two bed patients. To the patients and to the physician this discharge developing during the last week of convalescence from mumps was of little moment in an individual to all intents perfectly well.

The illustration in my article on scarlet fever (2), showed a photomicrographic drawing of the streptococcus that I used morphologically for an aid in scarlet fever, of an ordinary streptococcus, and of a diplostreptococcus that I had frequently found in measles cases. One of the greatest of my distresses

for the past eight years has been that I have ever been unable to find a scientific technician who would prove the morphological diagnosis by serological and immunity work. The reply was ever the same: it would be of little value as compared to the work we are now doing in seeking an antitoxin and a toxin-antitoxin. I had, in my combined bacteriological and epidemiological work, become impressed with the frequency with which unknown endemic sources of measles might well be related to older children in the family at the time carrying pathological membranes of mouth and pharynx and frequent unilateral nasal discharges, the latter showing a predominant diplostreptococcus, easily distinguishable from other streptococci in morphology. The following incident impressed me as of importance. After our city was through with a measles epidemic, a local orphan asylum, hitherto well isolated by its location, started up an epidemic of the disease. The attending physician was a firm believer from previous experience in my method of preventing diphtheria after a first case appeared and the causal carrier immediately found by nasal inspection confirmed with the microscope. Upon inquiry as to what he might do in the best interests of upwards of five hundred children, I suggested that whether convalescent or immune every child with nasal discharge that was unilateral or other than a simple coryza be cultured on the principle that results in terms of gram negative diplococci or gram positive diplococci might well be isolated for a period with possible lessened or freedom from meningitis and pneumonia. The attending physician was afterward impressed with the absence of any pneumonia among the measles cases, attributing it to a number of individuals being isolated by reason of morphologically suggestive pneumococci and gram positive diplostreptococci. I was impressed with the fact that in a considerable number of cultures I found predominantly, the fine diplostreptococcus I had previously correlated with possible measles carriers. Without exception they were found to come from convalescent immediately previous measles cases.

EARLY WORK

I began my epidemiological work for the city in 1914, a year of epidemic measles. By the end of the following year I had my facts well in hand and termed measles, a blessing in disguise, in that I knew that through epidemic measles I could with a few enthusiastic workers reduce both morbidity and mortality from diphtheria. With epidemic measles on the horizon in 1917, I obtained the temporary services of two nurses and as has been related, (4), cut morbidity to nearly one-third and mortality approximately half that of similar preceding years and further reduced it the following year. There then ensued three years of work in other fields during which my successor followed the lines of least resistance and the measles year of 1920 again raised morbidity of diphtheria to the usual peak of former years with mortality not far behind. Again taking up the work at the close of 1921, I was "favored" with a measles year in 1922. With a fairly adequate personnel for work, I was able as I have related to gain for the first time during and following measles, a diphtheria mortality rate of five or less and to continue yearly to reduce it by teaching my personnel to seek "pathological noses." I had passed through the experiences of a camp epidemiologist for the "duration of the war," some six months after it was over and found much statistical material for 1917 and 1918 that could be charted. I was impressed with the sequence of measles, and broncho-pneumonia, and streptococcal infections of every variety in the rural camps as contrasted with their absence or the presence of lobar pneumonia in urban camps. Fitting my experiences together there was a reasonable lead that mortality in measles could be reduced if we could keep the sources of other complicating streptococci away. With the inability to distinguish by the eye acute nasal carriers of streptococci from those of diphtheria, with accumulated evidence that the streptococcal carriers were as potent for acute infections in others, even more so than diphtheria, a sensible factor seemed to be the corraling and isolation of such carriers before, during a measles epidemic and to have all children with measles treated in the home. I instructed my nurses to hold for cure every nasal discharge simulating a diphtheria carrier even though initial or continued cultures did not show the diphtheria bacillus. Epidemic measles of 1917 showed 1774 cases with 24 deaths, that of 1920 showed 914 cases and twenty-five deaths, the epidemic of 1922 resulted in 1869 cases with thirty-three deaths. The epidemic of 1925 yielded 1166 cases with five deaths over one thousand cases and the total deaths occurring during the first six months in an area, approximately one-third of the city. The remainder of the city was visited in the first six months of 1926 with a total of 1386 cases and three deaths. The controlled destructiveness of the last epidemic whether taken by single years or for both years is notable for two reasons. Firstly, case mortality rates were different from the usual one death to every one hundred cases at the most for any epidemic year. In 1925 in the poorer section of the city there was but one death to nearly 250 cases. For the past quarter century epidemic measles has claimed a mortality rate per hundred thousand of population of approximately twenty or greater. A certain portion of the more than quartered reduction in mortality, (none in morbidity), I feel is due to furnishing immediate medical services in the homes without questioning the seriousness of cases. Two questions may be raised at this point: many will say that as many or even more deaths primarily measles may have been hidden under a death certificate with pneumonia only as causal: others will suggest that during each year pneumonia was not the frequent complicator of other measles years. To the first question I may state that I personally make up the vital statistics monthly for the department and can rule out any error. To the second question I have also the assurance that epidemic grippe in May, 1925 and a greater wave in the first three months of 1926 gave rise to an unusually high pneumonia mortality. I have, in the absence of laboratory proof of definition and of virulence, no absolute proof that an excess of two hundred nasal carriers in 1925 and over one hundred in the first half of 1926 were the dominant cause of prevention of mortality. Of moment is the fact that the majority of the carriers were picked up in the areas where measles was appearing or in advance, on the edges of the burning area as

it were. The average time duration of carriership was rarely less than ten days, many being held for upwards of a month.

The use of scarlet fever antitoxin has been infrequent and the use of measles serum yet more rare.

As an attending physician to the bedside in hospital practice I was taught by the older type of practitioner to observe the color and consistency of the sputum of a pneumonia patient: the green blood streaked mucoid expectoration was suggestive of a laboratory report of influenza bacilli on smears; the rusty, purulent expectoration at the next bedside was a tentative aid in diagnosis of the pneumococcus: a thick purulent exudate from a pleural tapping was an expectant laboratory report of the pneumococcus and the forerunner of the handing over of the patient to the surgeon: a thin serous, little purulent, exudate from another chest tap was indicative of the streptococcal involvement and an indication not to operate. Likewise a study of the color of the tongue and the pharyngeal vault, together with the character of the accompanying or absence of coating of the tongue, meant a whole volume to the trained observer of experience before the days of bacteriology. Today the rank and file pass them by, relying on a laboratory report.

In public health practice of the socalled standard type there is the same milling around. The peaks and valleys of variations in morbidity and mortality of the specific respiratory communicable diseases are perhaps lower than a decade ago, and the standard teaching that case begets case continues theoretically well founded; personal hygiene and health habits have become the opportunity of teaching the public in those terms how to sidestep becoming a case. The handmaiden is the public health nurse instructing the individuals the procedures of quarantine and isolation of the case and epidemiology continues to be the office sorting of nurses histories for the common factor of infection, traced eventually to a case. We have travelled the road through in typhoid fever alone: here the first essential is to find the human carrier. We have gone a step further in typhoid fever: a responsible health department earns glory of results in cutting off the peaks of variations by seeking carriers in advance of cases. Responsible departments are more concerned with activities controlling the various paths typhoid infection may take to reach their public than they are in educating the public that by personal hygiene and health habits the public may dodge known infective paths.

CONCLUSIONS

1. Bacteriology as used in public health identifies and terminates, both cases and carriers of communicable diseases, by the presence or absence of the known infecting organism. Fundamentally it is the basis of the teaching that case begets case. When the pathology of the organs that are the seat of the infection are studied in carrier as well as in case, there may be found to be no exception in typhoid fever as compared to the more common respiratory diseases such as diphtheria, scarlet fever, and "grippe." The "enormousness" of bacterial content as well as the manifest contact path lies in these diseases as in typhoid fever, in the nasal carrier.

2. The single procedure of search for the diphtheria carrier when conducted pathologically, is resultful in finding nasal carriers of scarlet fever and of "grippe" at the least, if the bacteriological procedure of "negative for diphtheria" does not in turn, control the situation by the holding of diphtheria carriers only. The single procedure, isolating "pathological" noses for the duration of the pathological discharge, is resultful in immediate reduction of morbidity and mortality of diphtheria and of scarlet fever, and apparently as true in the mortality measles. In all three of the diseases, measles in the main, mortality reduction is gained by the reduction of the death dealing complications.

3. There is no evidence from the records of any city in this country that Schick testing campaigns, irrespective of the years in progress have, during or following epidemic measles years, continued to cut morbidity and mortality rates of the immediately preceding year or years. In no instance on record has there been gained a zero mortality for diphtheria in the preschool age group while such testing has been for one or more years carried out in the school population. In this city for 1925 where, at the end of the year, not more than fifty per cent of the school population had been reached by the Schick test, and no work had been done in the pre-school age, prevention of diphtheria by search for, and isolation of, diphtheria carriers, (gained from search for pathological noses only) gained such a record.

4. On the contrary, one of several similar areas of cosmopolitan races in this city, initiated a Schick testing campaign in the first half of the year 1923. For the year the morbidity was over one hundred and the mortality was fourteen. A comparable area where all the previous years of history showed equally high or higher morbidities and mortalities, had for the same year, and for the first time in its history, a morbidity of sixty and a mortality of two and five tenths. In the latter area prevention of diphtheria was limited to search for carriers. In the following year, in the last mentioned area, morbidity was reduced to forty-two and mortality to zero (all ages), although one-half of the schools of the area had not yet been reached by the Schick work.

5. By the application of pathology to the prevention of the common respiratory diseases of childhood, results are immediately gained in that class or classes of population as are at the same time, those most continually the sources of endemic disease and least often reached by purely educative programs. At the last analysis if reached in the greater per cent, they yet remain a source of the disease by the content of carriers.

6. Finally the application of pathology for the corraling of carriers of the communicable respiratory diseases is a medically responsible procedure, a responsibility of a health department that may well be asked for by the public.

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Malnutrition in Infancy*

H. BROOKER MILLS, M.D., F.A.C.P.,
and SAMUEL GOLDBERG, M.D.
Philadelphia

In dealing with the subject of malnutrition we touch upon almost every abnormal phase of infant life. Digestion is so closely correlated to every other function that one cannot speak of any pathology or abnormality in infancy that would not touch upon child nutrition. Our purpose in this short review is more to deal with the outstanding etiologic factors, their prevention and removal if possible, rather than with the discussion of the physiology of digestion.

It is in the early recognition of the abnormal, and the ability to interpret Nature's warning, that we have our only hope in reducing the high infant mortality due to malnutrition.

The infant speaks in terms of bowel movements, of vomiting, of loss of weight, of restlessness, of abnormal or rather subnormal development—and the earlier these conditions are recognized and properly interpreted the greater are the chances for cure.

In the broadest sense nutritional disturbances are due to a disproportion between the nature of the food and the ability of the organism to digest and assimilate. (Abt).

We will consider the etiology of malnutrition as being due to one or all of three primary causes, as developed by Czerney and Keller: 1. Food. 2. Infection. 3. Constitutional anomalies or weakness.

Food as a disturber, because of modern modes of living, is becoming more and more a potent factor. No sooner is the baby safely tucked in its crib after birth, and the mother has regained enough strength to think of her social obligations, than she begins to look for excuses to give the baby a bottle, if not a complete weaning, at least one or two relief bottles, which to our mind is the beginning of a rapid weaning. The number of relief bottles soon tends to increase, for as the milk only appears in the mother's breast directly as it is made to do so by the periodical sucking of the baby, it consequently disappears in direct proportion as the function is omitted.

Of the artificially fed brought to our service suffering with malnutrition, overfeeding in quantity, quality and frequency has probably been the most common cause. At first the baby seems to gain, but soon digestive disturbances follow and every known proprietary food is tried. If the quantity alone is in excess, regurgitation and vomiting are early symptoms, but if the quality of the food is not well tolerated, these are followed by a train of symptoms depending upon which is the offender, namely the fat, the protein or the carbohydrate, while if frequency of feeding is the trouble, training of the mother is the only remedy. We will consider these quality factors in the order of occurrence.

Fat.—When this is given in excess of tolerance it usually causes vomiting, which occurs about one hour after feeding, and the vomitus is sour. It may also cause either diarrhea or constipation. When the bowels are loose the stools are acid, greasy, and green in color, containing lumps of fat and mucus. The acid in the stool is due to the fat breaking up into fatty acids, and these fatty acids irritate the bowel, increasing peristalsis, and diarrhea ensues.

When these fatty acids combine with the mineral substances of the body, and the mucus of the intestines, typical soap stools form, when, instead of diarrhea, constipation is present. The stools, when constipated due to fat, are foul smelling, whitish or grayish in color, very greasy and sometimes blood-tinged.

The urine in fat disturbance is highly ammoniacal, and alkaline in reaction, due to the excess amount of fatty acids entering the blood and being neutralized. Both the stools and urine are highly irritating to the skin.

Carbohydrate excess causes frequent watery, acid stools, accompanied by a great deal of flatulence and colic. Bacterial action causes fermentation to take place; this in turn increases peristalsis, and the fermentative diarrhea follows.

Protein excess causes symptoms mainly referable to the intestinal tract. Vomiting is rare, and, if present, is in the form of a large cheesy curd, which is not sour as in fat or carbohydrate excess. These vomited protein curds are tough, yellowish or whitish, and beanlike. The stools are usually constipated, although they may be loose and green, but do not have a foul odor nor irritating properties.

Total underfeeding, both in quantity and quality, also occurs very frequently. Occasionally a baby fails to gain on the amount of food which ordinarily satisfies another infant of the same weight and age. This depends on the baby being able to assimilate what it ingested. Insufficient amount of food ultimately calls on the reserve of the body, and inanition follows.

Even though these individual food elements are thus considered as causes, Finkelstein well emphasizes that these alone cannot be entirely considered as primary causes of nutritional disturbances. These disorders are rather the result of faulty correlation of the various elements. There is also some biologic property in human milk which is not found in cow's milk, and even though the elements in each be exactly the same, it must be remembered that milk is not only a food but a medium in which ferments and cells enact their digestive processes, and that these must be dealt with separate from the individual elements in the milk.

We next consider infection as a cause of malnutrition. The infection may be enteral, or that occurring within the alimentary tract, or parenteral, that taking place outside of the alimentary tract, such as influenza, furunculosis, otitismedia, bronchopneumonia, and other conditions. Enteral infections, even though predisposed to by previous nutritional disturbances, are usually followed by atrophy and marked intolerance for food.

Thus we have a food intoxication, fermentation

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follows, infection sets in and then the usual picture of gut injury.

The occurrence of fever in these alimentary infections is believed by Moro and Hersh to be due to decomposition of protein substances, while Finkelstein believes that the fever depends upon dehydration of the intestinal mucosa.

It is important to be able to differentiate fever of alimentary origin and that of infectious origin within the intestinal tract. If the temperature is due to intoxication from food injury alone, withholding of food for about twenty-four hours will bring it down, but if, after withholding food, the temperature still persists, alimentary disturbances plus infection must be considered.

Lastly we consider constitutional defects. These, when present and unrecognized, cause the weight of the infant to remain stationary, in spite of sufficient quantity and quality of food. Vomiting, flatulence, restlessness and loss of appetite are all ascribed to the defects in the mother's milk, and the baby is weaned. Bottle feeding and various foods are tried, but the baby shows no improvement. Clinical observations show that it is neither the quantity nor the quality of the food, but the constitutional state of the baby that causes disturbance.

Exudative diathesis, as it is termed, is one type of constitutional disturbance. The symptoms in these cases are very similar; the children usually have eczema, a peculiar growth of the hair, a dry skin, are subject to colds, and usually have the socalled geographic tongue. With these cases the nutritional problem is very complex.

Another class of cases that does not thrive comprises those of neuropathic origin. Here the family history will show that all the children suffered in the same way, and that the parents have suffered from headaches, neurasthenia, etc. One can almost diagnose cases of this class as he enters the room. Abt so vividly pictures it when he says that the atmosphere is tense and sparkles. The mother is on her toes or "up in the air." She speaks in a highpitched voice, or fairly shouts, and talks rapidly and incoherently. In one breath she talks of her baby; in the next of her noble self, her suffering and discomforts, and her sacrifices. The father also is present, and he concludes his baby is on the brink of disaster, his business will be ruined, and his wife will become a nervous wreck. To complicate matters the near relatives take a hand, and shower their opinions and affections. This is the environment into which the baby with an already neurotic taint is placed.

Tuberculosis, syphilis, congenital rickets, pylorospasm or pyloric stenosis, endocrine disturbances, or in fact any form of congenital anomaly must be looked for as potent etiologic factors in malnutrition.

TREATMENT

Our most urgent message to you for the reduction of infant mortality from malnutrition is the conservation of human milk. Unless you are yourself aware of the problems of artificial feeding, you cannot hope to convince the nursing mother of her duties to her baby. Too often are we called to see an infant suffering with malnutrition where the obstetrician or midwife placed it on a formula at a moment's decision.

We plead for a greater cooperation between the obstetrician and pediatrist. It is not after the child has gone through the various stages of vomiting, diarrhea, loss of weight, and dehydration that our success in these cases is to be looked for, but it is before permanent injury to the infant's digestion and metabolism occurs that we may hope to raise a healthy baby.

Eliminating the first week's loss of weight by feeding the baby until the mother's milk comes in is, to our minds, highly commendable.

It is well, too, to inform the mother that it takes about two weeks for the maternal milk supply to properly establish itself, and it is during this time that the hygienic care of the mother, and of her breasts, will often determine whether or not the baby shall be breast or bottle fed.

When human milk is insufficient in quantity, we are of the opinion that complemental rather than supplemental feeding should be instituted. In other words we feel that if the mother does not supply a sufficient amount at each feeding the required amount of cow's milk should be given at once rather than replace a breast feeding by the use of a bottle.

The successful management of a case of malnutrition will as you see depend upon discovering the cause, and a careful history is a most valuable aid in doing this. From the history you will gather whether or not the child has been underfed or overfed; the kind of food; the hereditary taints; the hygienic surroundings; the method of preparation of the food; the frequency of feeding; the character of the stools, etc. Physical examination will reveal any signs of rickets, pylorospasm, tuberculosis, syphilis, degree of emaciation and dehydration, amount of excoriation, and determination of any focus of infection.

When dehydration is marked and vomiting has persisted our best results have been obtained with gastric lavage with five per cent. sodium bicarbonate solution, once or even twice daily, permitting to remain in the stomach after the lavage at least four to six ounces of solution. In more severe cases the intraperitoneal administration of normal salt solution has undoubtedly been a lifesaving measure. This must be done very carefully and with the most guarded technic. In about thirty cases in which this method has been employed we have only had one case of marked abdominal distention, probably due to a sterile peritonitis, but this quickly subsided.

For stimulation in these athreptic cases we rely mainly on brandy. Atropine has been invaluable in the control of the vomiting of pylorospasm and colic. We usually start with one drop of one to one thousand solution, but do not hesitate to push it to its full physiologic effect.

Calcium bromide in doses of from two to ten grains, depending upon the weight of the child, is given with excellent results in the highly neurotic type, and where intestinal pain and colic is severe.

An initial course of calomel, followed by saline, in cases where putrefaction and fermentation exist, we still find valuable in spite of many opinions to the contrary. We feel that the small doses do not have any irritating effect on the intestinal mucosa, but that it stimulates the flow of bile, thus inhibiting the bacterial flora.

Unless we are dealing with a "starch injury" we

usually commence with a barley water feeding on a two hour basis, and, if there be no carbohydrate intolerance, malt sugar is added. This we continue for a day or so, when, being governed by past history, we determine the kind of food to be given. Thus, if we think we are dealing with a case of fat intolerance or fat excess we will start the child on a skimmed milk formula, or, following the teaching of Marriott, we use lactic acid milk sweetened with light karo corn syrup.

Marriott has shown that cow's milk has a greater buffer value, i. e., that it takes more acid or alkali to change its reaction; therefore, it takes a greater amount of acid, which we are supplying in the use of lactic acid, to change the chyme to an acid reaction. This is necessary on leaving the duodenum to stimulate secretion formation and pancreatic secretion.

In some cases of fat intolerance, where skimmed milk is given but the child does not gain, we have followed Czerny and Kleinschmidt of Germany in the use of the boiled butter flour mixture, and with excellent results. This method of feeding is based on the theory that butter, when freed of its volatile acids by boiling, is assimilated in a high percentage when combined with whole wheat flour. We can thus feed them a high percentage of fat and still not have any symptoms of fat disturbance. Where the fat disturbance is mild the simple addition of lime water is sometimes sufficient to correct the trouble.

Of the carbohydrates our experience favors the malt sugars, although we occasionally employ the cane sugar in addition, where there is marked constipation.

Protein intolerance is probably the result of the child's inability to digest the heavy curd in cow's milk, and it is in these cases more than any others that the initial purge is most valuable.

Boiling the milk for two minutes tends to make the curd more flocculent and in some cases will relieve the condition. Jacobi advocates the addition of cereals to the formula. This is claimed to attenuate the curd, thus also helping to make it more flocculent.

When the simple addition of cereals and boiling does not correct the trouble pancreatization must be tried, and this can be done by the use of the peptogenic milk powder or the combination of flour ball and pancreatin in from two per cent. to five per cent. of mixture. Sodium citrate in doses of two to three grains in solution to the ounce of the formula has also proven of benefit.

In cases where we are dealing with fat intolerance to which an intestinal infection has been added an initial dose of castor oil should be given, this to be followed for twenty-four hours by weak tea sweetened with saccharin, or a cereal water. Here long periods of starvation should not be carried out. Calcium caseinate should be boiled and given with the milk, as this supplies the minerals for the combination with the fatty acids of the intestinal tract, so that saponification may take place and the irritation due to the fatty acids be overcome. In our experience cases associated with marked infection in the gut, plus systemic manifestations, are the most serious. There is a large area of absorption of bacterial toxins in the intestinal tract and many cases prove fatal within twenty-four to forty-eight hours.

Bismuth in large doses, tr. opii camph. and alkalies by mouth, and colonic irrigations should be employed. Suppurative measures are urgent from the onset.

In the type of malnutrition due to constitutional derangement codliver oil probably is most valuable. We advise starting as early as the third month with small doses given in fruit juice, increasing both as they are tolerated.

Iron mixtures are valuable in cases where there is a marked anemia.

Exposure directly to the sun's rays for periods varying from twenty minutes to one hour once or twice daily has been found to be a great stimulant to metabolism; so much so that, where the direct sun's rays cannot be had, the various quartz lamps or ultraviolet rays are being employed with excellent results, in cases of malnutrition of tuberculous origin.

This by no means covers the subject of the etiology and treatment, but if it has only emphasized the important points, particularly with an idea towards prevention, we will feel that it has served some purpose.

The Care of the Premature Baby*

WILLIAM N. BRADLEY, M.D.,
Philadelphia

Because of the brief space at my disposal this paper will be confined to a discussion of the treatment of cases of simple prematurity. Where other conditions exist, the picture becomes so complicated that each case must necessarily be considered individually.

Strictly speaking, all infants are premature who are born before the end of the normal term of pregnancy (forty weeks); in common usage, however, the term refers only to those infants whose gestation period was 260 days or less (3). Owing to the difficulty of definitely fixing the date of conception, it is impossible to determine accurately the degree of prematurity of the infant. As an aid to this end various studies have been made of weights of the fetus at various stages of development, and time of development of ossification centers, but no satisfactory standards have yet been evolved. In the case of foundlings, where all data are absent, the degree of prematurity becomes still more a matter of conjecture.

In so far as the length of gestation is concerned, a fetus of six months or less is not viable; the mortality of those infants prematurely born at six or seven months has been given as eighty per cent. and, those born seven to eight months forty-four per cent. (4).

From this point upward the infant's chances in-

*Read before a combined meeting of the Philadelphia Pediatric and Obstetrical Societies, November 10, 1925.

crease with prolonged intra-uterine life, when by the thirty-eighth week the mortality drops to eight per cent. (2) unless the infant is handicapped by the presence of other factors.

Mortality the first day of life has been estimated as fifty-seven per cent. (4).

From the standpoint of weight, a fetus of 720 grams is the smallest that is known to have survived (7). Cerebral and spinal hemorrhages are frequently found in those babies weighing less than one thousand grams and these are one hundred per cent. fatal; as well as those who are victims of hemorrhagic diathesis or atelectasis.

No general law of averages, however, can assist us in the care and management of the individual premature baby. We are able to say that below a certain age or weight an infant cannot survive, nor yet, in the presence of certain conditions, but beyond this each baby becomes an individual problem.

The causes for the premature expulsion of the fetus will not be discussed at this time, except in so far as they relate to remediable conditions in the fetus.

The general appearance of a premature baby varies with its fetal age, but in general, it is a small puny infant with angular features, thin soft skin, palid or vivid red, hanging in folds through which the blood vessels are distinctly visible, with scant adipose tissue.

With the lengthening of fetal life, these characteristics become less pronounced, and the fetus approaches the appearance of a full time infant. Any attempt at estimating mortality percentage should be done by group classification according to conditions present.

The adequate care of such a baby demands the same preparation for its birth as is required for an emergency operation; always remembering that every hour that can be added to its life increases its chances for ultimate survival. This preparation will concern first the new environment into which the baby is thrust. It should be received immediately into blankets, surrounded with hot water bottles, and placed temporarily in some form of incubator.

A premature invariably has a subnormal temperature, is susceptible to changes in the temperature of its environment, and radiates comparatively more heat than a baby of normal size (5). For this reason exposure while dressing the cord should be avoided if possible and measures instituted to sustain body temperature, but in the presence of asphyxia, cyanosis and atelectasis exposure is sometimes unavoidable.

As soon as convenient, the weight and other important data should be recorded, the baby oiled, a compress diaper applied, and the baby again wrapped in a special jacket; as the premature baby possesses greater susceptibility and but feeble resistance to infection, strict asepsis is imperative.

When possible the room selected for the premature should be sunny and provided with proper heat, ventilation and moisture. Elaborate premature rooms have been constructed in some maternities, which meet these conditions and are regulated automatically. Such installation is expensive and rarely practicable.

Every effort should be made, however, to approach such an environment. The temperature of the room should be maintained at 80° and the humidity 55-60 per cent.

Many forms of incubators have been devised, which vary in construction from a simple bed, to complicated devices, regulated to automatically provide fresh, warmed, moist air.

For practical purposes, in the average maternity a nursery bassinet, arranged as follows will, I believe, meet all requirements: In the bottom of the bassinet is placed a mattress and the sides are lined by a blanket covered with sheeting. About three inches from the top of the bassinet, on the inside, a blanket is stretched tightly from side to side. Under this blanket, on which the baby lies, is placed two metal trays; one to hold a forty watt electric light bulb protected by a wire cage, and another to hold water. Across the top, three-quarters the length of the bassinet, from the baby's chin downward, is stretched a blanket and sheet covering, and a similar one upward to the top of the bassinet, leaving a space between for the circulation of air and for the nurse to observe and care for the baby. The head should always be kept covered. A thermometer placed alongside the baby under the blanket covering is charted every fifteen minutes by the nurse. An attempt is made to maintain the temperature of the bassinet at 90 to 100°, if the baby's temperature is 96° or below, and as the baby's temperature approaches normal the temperature of the bassinet is reduced. The room temperature should be kept at 80°. The bassinet temperature is regulated by the nurse, who turns the light off should the temperature rise above a fixed point and turns it on again to maintain that degree of temperature. The air in the bassinet should be continuously warm and moist.

Subsequent care will include maintenance of even room temperature, protection of the baby from shock, thermal and mechanical, the skin from contagion or injury, and the eyes from light. The baby should be disturbed only when necessary for oiling and change of gauze diaper (5). It is advisable, however, to change the position of the baby occasionally to avoid congestion of the lungs, and in the presence of atelectasis.

The question of the nurse is important. She must be competent, interested, realizing her responsibility, and willing to make sacrifices. She should be prepared to meet any emergencies which may arise, overcome the difficulties of feeding technique, and combat asphyxia and cyanosis.

Initial loss of weight in the premature is relatively greater than in the normal. These babies regain their birth weight more slowly, twenty to thirty days (1).

Feeding the premature baby is beset with the same difficulties as feeding the normal baby, but to a greater degree.

It becomes apparent very early that it is difficult to supply sufficient food to the premature baby to meet its caloric requirements. In order to save these babies, it is necessary to push the feeding to the limit of their digestive capacity.

Sufficient nourishment should be ingested to insure growth and maintain body temperature, but the gastric and digestive capacity is small, as against a high caloric requirement, which for the premature is distinctly greater than for the normal baby, 140-160 per

K. (4). The more premature the baby the more feeble its digestion. Metabolic processes are slower and loss of heat relatively greater than that of a full time infant. Tolerance for sugar appears to be greater than for fats and proteids (9).

Breast milk offers the best chance for saving the infant. In a maternity the milk of some other patient known to be free of specific disease may be given until the mother's milk appears. If the baby is too small or too weak to be put directly to the breast, the milk should be expressed and fed to the baby either with a dropper or Breck feeder, preferably the latter; and as the amount needed at first is small the milk may be obtained just previous to feeding. When the mother's milk becomes available it should be expressed at least six times a day (1), emptying the breasts completely in order to maintain the milk supply. Later if the supply is abundant it may be expressed directly into the baby's mouth. If a wet nurse is employed her milk should be expressed two or three times a day, kept on ice and warmed before feeding. If either the dropper or Breck feeder prove impracticable, the baby may be fed by gavage through nose or mouth, using a No. 12 or No. 14 French catheter. Feeding from a dropper should not be prolonged as it induces fatigue; gavage may avoid fatigue, but if continued for too long a period may do harm by increasing risk of infection. The Breck feeder has the additional advantage of teaching the baby to suck. Breast milk, owing to its fat percentage, should at first be diluted at least one half and given in increasing quantities, until the caloric requirement is approached. It may be diluted with cow's milk, whey or barley water, and, if necessary, predigested (5). The use of sugar solution aids in combating low temperature.

Feeding the premature baby with artificial food is at best most unsatisfactory. All forms of milk preparations have been suggested to meet the requirements; milk dilutions, top milk mixtures, malt soup, condensed milk, buttermilk, etc., with or without carbohydrates.

In considering the quantity to be given, we must bear in mind the gastric capacity at various ages of fetal life; remembering that the walls of the stomach are elastic and, that the amount the baby can take is somewhat in excess of that usually set down as the gastric capacity for a given age.

In spite of the baby's need for a relatively large amount of nourishment, it must be watched for evidences of overfeeding and digestive disturbances and the formula varied accordingly.

DEGREE OF INCREASE

Smaller and slower increases in weight must be expected in those fed artificially. Fat percentage should be increased slowly. Sugar may be added to increase caloric value and supply heat and, the mixture may if necessary be peptonized; orange juice and cod liver oil should be given daily.

It has been estimated that the amount of fluid required daily by the premature infant is equal to one eighth to one fifth of its body weight (1). Plain boiled water should be given between feedings to supplement the fluid content of the milk in order to meet this requirement. The amount may be increased in the presence of fever and a high bassinet temperature. In most cases it is deemed advisable to keep the baby in the hospital until its weight approximates five pounds.

In the routine care of the premature baby where no pathologic condition exists we are chiefly concerned in the avoidance of the aspiration of the food, digestive disturbances, undernourishment, insufficient supply of water and infection.

DESIRE FOOR FOOD

Few premature infants show a normal desire for food and the more premature the baby the greater the difficulty in this respect.

While at first the baby may show a tendency to nurse, as it loses weight and becomes more weakened, it sleeps incessantly and refuses to swallow. Such cases require catheter feeding, stimulation, and fluids by mouth, rectum or skin. Physiological salt solution for one or two feedings is advisable in order to stimulate thirst (8). The intraperitoneal use of salt solution or glucose should be limited to small amounts (9).

The occurrence of vomiting must in most instances be regarded purely as a symptom. Vomiting the result of toxic or septic conditions will not here be considered. Little attention need be given to slight spitting up if the infant is doing well otherwise. Regurgitation frequently results because of the relatively vertical position of the stomach, over distention and handling. The approximate amount lost at each feeding should be noted, whether or not this amount is increasing and the presence of blood or bile.

If a baby is nursing directly from the breast, the number of nursing minutes may be lessened or the interval lengthened. In severe cases it may be necessary to express the breast milk, boil or predigest it.

If artificially fed the interval may be lengthened or the quantity lessened, or it may be necessary for a time to reduce the fat or sugar, or to use skimmed milk, boiled or predigested. The method of administration should be slow but not sufficiently prolonged to weary the baby. Should the vomiting be severe and persistent it may be necessary to procure a wet-nurse in an effort to save the baby's life.

It is obviously necessary to give all the nourishment both in quality and quantity that the baby's digestive capacity will permit in order to avoid the consequences of underfeeding.

Each baby must be considered individually. The quantity strength and interim of feeding should be prescribed each day, according to progress made and conditions present.

The baby should not receive its first feeding until a bowel evacuation has occurred. If necessary this may be accomplished by a small enema, or castor oil. Constipation occurs chiefly as the result of underfeeding or insufficient fluids and may be relieved by increasing the amount of water given and by strengthening the formula to a point slightly in excess of the digestive capacity of the baby. In addition a suppository may be held in the rectum, or the tip of a catheter oiled may be inserted at regular times each day.

Every baby should be considered a potential case of rickets, spasmophilia and anemia.

Without entering into a discussion of the etiology and symptomatology of rickets it is sufficient to say that there exists calcium deficiency in association

with a low percentage of inorganic phosphorus (1).

Associated with rickets in the premature baby, anemia frequently develops during the first three months of life (1). Likewise spasmophilia is found quite frequently in prematures, in the breast fed as well as in the artificially fed and apparently bear a distinct relationship to rickets and anemia (1). A diminution in the calcium salts in all probability is the most important factor in the development of this condition.

The prophylactic measures against all the above conditions should have been started early in intra-uterine life, by prenatal care of the mother.

After birth, preventive treatment should begin early, the following points being observed: Feeding breast milk if possible. Careful hygiene. Including fresh air and sunshine. Administration of orange juice and cod liver oil in increasing doses, or tri-calcium phosphate in emulsion in cod liver oil. Any other conditions which develop must be met as in the normal baby.

The existence of cleft palate, with or without harelip, complicates the feeding problem and diminishes the child's chances of living. We attempt to combat this by the use of a dropper or gavage if the baby is too weak to nurse, but if able to suck a special cleft palate nipple is availale which often solves the problem extremely well.

In estimating a baby's chances for life it becomes necessary to take into consideration many factors, chief among which are: Length of intra-uterine gestation, degree of development when expelled, weight, character of pregnancy and labor, presence of malformations and anomalies, transmitted parental conditions, maintenance of body temperature, initial loss of weight and complications such as: Injuries, anatomical defects, asphyxia, cyanosis, atelectasis, hemorrhagic diathesis, and infections (4).

Before the twenty-seventh week of fetal life there is slight chance of surviving (1). Under 1,500 gm. an infant has less than even chances for surviving. Between 1,500 or 2,000 gm. the chances are even, while over 2,000 gm. the chances are good, if there are no adverse complications.

An abrupt rise of temperature or failure to rise when the infant is placed in an incubator is an unfavorable sign (1).

An early birth from induced labor may be regarded more favorable than from spontaneous delivery.

The presence of syphilis, tuberculosis, nephritis, alcoholism, eclampsia and chronic heart disease, in the mother producing faulty nutrition in the fetus are all detrimental to ultimate survival (1).

Many infants with organs sufficiently developed to carry on the normal physiological requirements have overcome the handicap of prematurity by the end of the second or third year and compare favorably with full time children (1).

A certain number will, however, display characteristic skeletal changes with a tendency to the conditions previously described viz: rickets, anemia, spasmophilia.

The majority of premature infants born after the thirty-second week into a proper environment without birth injuries show normal mental development, except that they are somewhat slower in walking and talking, and with a tendency to exhibit temper and emotionalism (1).

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1725 Pine St., Philadelphia, Pa.

Essential or Primary Hypotonia in Young Children*

JACOB SOBEL, M.D.

New York

In presenting the subject of muscle and joint hypotonia as it occurs in infants and young children, no attempt will be made to enter into a full discussion of all the diseases and disorders in which this condition is found. It is my purpose rather to direct attention to a class or group of children in whom there exists a primary or essential loss of muscle and joint tone, a muscular and joint atony, without the presence of any basic physical or mental disturbance and without any evident gross pathology in the muscles, joints, or bones. These children are brought to the physician by the anxious parent with the complaint that the child does not walk or stand, walks with difficulty or with unsteady gait, falls or trips readily, tires easily, limps, inclines the body to one side, is unable to sit up properly, or hold the head erect, or has curvature of the spine, or weak feet.

Perhaps it would be more interesting to record in their own words the chief complaint of the parents when these children are presented. They will tell you, "the ankles turn in," "all bones crack," "bends feet under him," "foot comes down," "walks crooked," "child trips all the time," "legs bend when walking," "back is round," "legs are weak," "don't use limbs hardly," "loose joints and walks funny," "falls easily," "don't stand," "don't walk," "can't keep head up," "don't sit right"—these or some similar and significant statements have been noted on my history cards under the heading of chief complaint. One parent stated, "when she sleeps her hip goes out of place when she turns over."

Upon physical examination the usual picture of this type of case is as follows:

The child as a rule is well nourished and free from

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Fig. 1.—Hypertension of the elbow, marked hypertension of the wrist and phalanges, genu recurvatum, pronated feet, distended abdomen.

Fig. 3.—Hyperextension of the wrists and phalanges.

Fig. 4.—Marked dorsiflexion of the ankles.

Fig. 6.—Subluxation of metacarpo-phalangeal articulations in the father.

any physical disease and mental or psychic abnormality. He either does not walk or stand, walks with a limp or an atypical waddle or in an unsteady manner. Upon sitting up his spine is kyphotic or scoliotic and admits of hyperextension with correction of the deformity. Examination of his extremities shows that his shoulders are more mobile than normal, there is hyperextension at the elbows, hyperelasticity of the wrist and fingers so much so that in some cases the fingers can be bent backwards almost to or to the wrist and the dorsum of the wrist to the extensor surface of the forearm. The thighs can be readily flexed upon the hip joint so that the toes touch the neck or the occiput in some cases. At times subluxation of the hip and shoulder can be demonstrated at will. Hyperextension, to the point of genu recurvatum, is seen at the knee while walking, or can be produced by manipulation, while by grasping the lower thigh the knee can be dangled, flail like, from side to side. There is a wide lateral give or play to the knees. At the ankle dorsiflexion will approximate the dorsum of the foot to the anterior tibial region. There is frequently a foot deformity in the form of a pes planus, as well as pronation, hypereversion and hyperinversion. There may be abdominal distention and constipation, in some cases very marked.

All the aforementioned manipulations can be carried out without pain or discomfort. There is no apparent atrophy or hypertrophy of the muscles, there are no sensory symptoms, no disturbances in deep reflexes, no abnormal electrical reactions, no apparent motor weakness, nothing to indicate a pathological change in the muscles themselves as a result of present or previous disease. There exists what appears to be a congenital defect in the muscle tonus without evident pathological basis. Coincident with this hypotonia of the muscles there exists a flaccidity of the ligaments and capsules around the joints and the combined result of an inherent loss of tone in muscles, ligaments and capsules gives the picture of joint hypotonia or flaccid joints.

Whether the atony of the muscles is primary and that of the ligaments and capsules secondary, whether the reverse is true, or whether they both occur at the same time due to congenital defect could not be determined by me from the history or examination of my cases.

While I have pictured here a class of cases in which the muscle and joint hypotonia is pronounced, I should like to emphasize that there exists a much larger group in which there is a moderate or mild degree of hypotonia, in which the hypotonia is less marked, the number of joints involved is less in number and the subjective symptoms and objective findings are less distinct. It is this latter group which comprises many instances of flat feet, round shoulders, and scoliosis in older children.

In speaking of myotonia congenita (Oppenheim's Disease) Holt brings out this point very forcibly as follows:

"Besides the marked form of disease, it is now recognized that myotonia may occur in all degrees of severity. In the mild form there may be only very great weakness and atony of the muscles. The ability to hold up the head or to walk may then be greatly delayed though the intelligence may be quite normal. These cases are often confounded with rickets. The milder forms of myotonia may be readily overlooked and may cause but little interference with function. Between these and the severe forms of the disease, there are seen all degrees of muscular weakness."

This circumstance finds its analogy in other conditions such as disorders of the thyroid gland in which we may have all the symptoms from a mild hypothyroidism to the typical myxedema or of a mild hyperthyroidism to the typical exophthalmic goitre. In fact the number of atypical cases outnumber those of the typical variety.

Hypotonia while well known to the orthopedist is frequently overlooked by the general practitioner; more than that—and herein lies the greater danger—it is frequently considered by him an evidence of some serious mental, osseous or neurological disease, with the result that needless and unnecessary alarm is excited in the minds of the parents.

For the want of a better term joint hypotonia refers to a type of case in which because of congenital or undiscoverable reasons there exists an abnormal mobility of several or all the joints of the body, without the existence of any essential changes or disease of the joints themselves. Except for a reference here and there in relation to certain diseases with which this condition is associated very little has been written on the subject. Since this condition often results in weakness or disability of locomotion, carriage, and posture it is natural that many of these cases should find their way to an orthopedic institution and it is from the Hospital for Joint Diseases

that the material which forms the subject of this paper has been gathered.

When in 1916 Dr. Harry Finkelstein published his paper he stated in his report that the case was "unique," "the first of its kind seen during ten years' service at the Hospital for Joint Diseases" and "that no similar instance had been cited in the literature."

Since that time, with greater attention directed to the condition, a relatively large number of cases, not all of great severity it is true, have been observed during the routine dispensary and hospital work at the Hospital for Joint Diseases.

These cases which I consider belong to the group of essential or primary hypotonia are generalized as a rule, affecting practically all the joints of the ex-

Fig. 2.—Pronounced hyperflexion of the hip joint.

tremities although in various degrees of severity, so that we find mild, moderate and severe cases, so mild as to be overlooked so severe as to be diagnosed as a grave disorder. The severity varies not only with different children but in different joints of a given case.

I should like in passing to refer to muscle tone in early infancy. During the first three or four months of life there exists in most normal infants a physiological hypertonicity of the muscles—the myotonia physiologica neonatorum of Hochsinger—as evidenced by the rigidity of the fingers, arms and legs and the maintenance of these parts in flexion a continuance as it were of the fetal position. Feer goes so far as to state that "frequently the neck muscles are involved so that the head is drawn backward in which case a meningitis or Little's Disease may be incorrectly suspected."

On the other hand in practically all new borns and during the early months of life the ankles can be dorsi flexed so that the dorsum touches the anterior surface of the legs, an apparent hypotonicity or myotonia. I say apparent because this, too, may be an expression of the fetal position in utero.

Later in infancy up to nine or ten months there is a normal amount of elasticity or give to the muscles and joints as witness the ease with which many infants make a pastime of putting their toes into the mouth.

But after allowing for physiological limits, we find that just as there exists the hypertonic infant, the infant described by Haas as one with general spasticity of the skeletal and visceral muscles, with psychic instability, insomnia, crying, vomiting, cold extremities, etc.—the myotonic, vagotonic or spasmophilic child—just so there exists the hypotonic or myotonic infant or child—placid, sluggish, inactive, easily tired, constipated, with hypermobility of the joints in varying degrees.

The hypertonic child is athletic in a sense in that it will grasp objects and raise its head easily or can be lifted almost *en masse* while his hypotonic brother will be delayed in grasping objects, sitting up, raising its head and walking.

Within the past three years during which I directed special attention to this subject, I have listed in my pediatric class at the Hospital for Joint Diseases forty-five cases of essential or primary muscle and joint hypotonia. Even at that as I reflect upon my material, I feel confident that many mild cases were overlooked. These cases grouped themselves as follows:

Age:	under 1		5
	1- 2		23
	2- 3		7
	3- 4		3
	4- 5		4
	5- 6		1
	8- 9		1
	10-11		1
Sex:	Male—22	Female—23	
Degrees:	Mild		7
	Moderate		21
	Severe		17
Other Members of Family Affected:	(Uncle		1
	(Father		1
	(Father		)
4	(Father's brother		1
	(Father's nephew		)
	(Mother		1

Enlarged Thymus:	Number Examined	Yes	No
	11	2	9
Diaphragm involved (Fluoroscopic Examination)	11	4	7

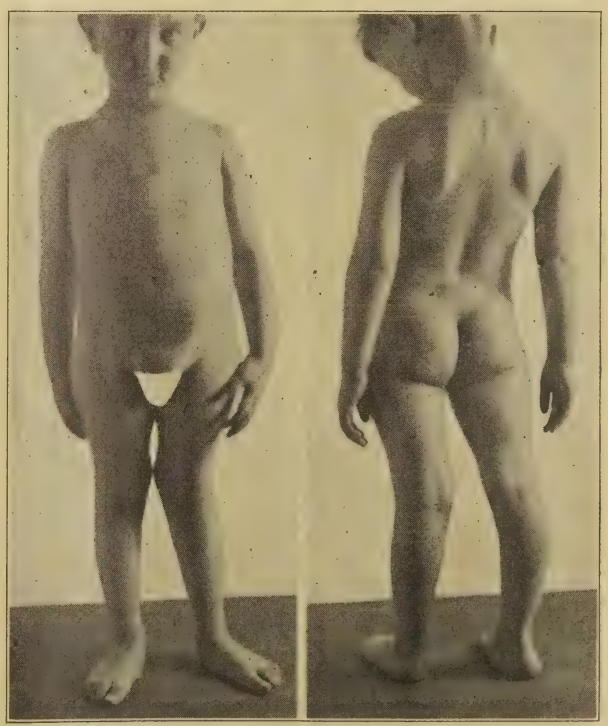

Fig. 5.—Hyperextension and lateral "give" of the knee joints.

I would not venture any opinion as to the frequency of this condition beyond the statement that it is more common than generally supposed. Nor would I base a statistical percentage of the frequency upon the number of cases recorded by me in the sum total of cases registered. The latter would neither be fair nor accurate because a very large number of

children applying at my pediatric class come for orthopedic or allied conditions.

I should like to call attention to an interesting phenomenon observed in one pronounced case of hypotonia (Hyman S., Registration No. 176793). This case was completely röntgenographed with the idea that possibly other structures than the joints were involved. The child was then fluoroscoped by Dr. Gustav Bucky, röntgenologist to the Hospital for Joint Diseases, and his report was as follows:

"There is no bone anomaly present. No demonstrable pathology on plates. However, fluoroscopic examination reveals what appears to be a paresis of the right diaphragm. The excursions about both diaphragms are irregular and disassociated the right moving down while the left moves up and conversely." We have here an abnormal disproportion in the height of the diaphragm and an incoordination of movement. Why should this condition exist? Given a diaphragm abnormally high on one side or the other the causes which come to mind are, 1, phrenic paralysis or paresis; 2, pleural thickening at the base of the lung causing paresis of the diaphragm (Krauss and Munk); 3, intraabdominal pressure (tumor, abscess, perihepatitis or perisplenitis).

None of these conditions obtained in this case. What then was the probable explanation?

Is it possible that the diaphragm partook of the general muscular atony and that just as there existed instability of locomotion, so in this case the diaphragm was atonic and coordinated imperfectly. Or is the explanation to be found in the fact that during expiration the abdominal muscles which play a rôle in this act and which in this case were atonic—the child was obstinately constipated—exerted uneven pressure or worked irregularly in the elevation of the diaphragm.

It is true that in the prototype of myopathies—Oppenheim's Disease—writers agree that the diaphragm, face and ocular muscles remain free. But admitting that in this disease there is no true diaphragmatic paralysis or paresis, does the diaphragm remain free in the sense that it acts incoordinately or imperfectly. To my knowledge no fluoroscopic examinations of the diaphragm have been made in Oppenheim's disease to establish this point.

With this case as a lead, fluoroscopic examinations were made in other cases by Dr. Bucky and Dr. Pomeranz, with the result that we established the fact that the aforementioned was not an isolated case. In addition to the case mentioned the diaphragm was fluoroscoped in ten other cases and in three cases some abnormality was found. The individual reports are as follows:

Harriet B., Registration No. 160500:

"Both diaphragms are at the same horizontal level. The general movements are equal and symmetrical on both sides, but careful observation shows that *every sixth to eighth inspiratory movement is somewhat irregular, the left diaphragm moving down before the right* and both returning to the horizontal level synchronously" (Pomeranz).

Richard O., Registration No. 177681:

"The movement of the both diaphragms appears somewhat diminished as far as the excursion is concerned. No difference of both sides" (Bucky).

Anna K., Registration No. 138758:

"The movements of both diaphragms are somewhat irregular. The radius of excursion of the right appears to be greater than the left, with some apparent delay in both rate and rhythm of the right diaphragm" (Pomeranz).

In all eleven cases were fluoroscoped and in four abnormal diaphragmatic function was disclosed.

An interesting observation in this connection was the fact that in some of the severe cases the action of the diaphragms was normal. Thus in the child whose photographs are presented and who was markedly hypotonic the report of Dr. Bucky was as follows:

Fluoroscopic examination: Negative. Speaking from the skeletal viewpoint joint stability and body equilibrium are maintained not only by capsular, ligamentous and cartilaginous attachments but also by the coordinated action of surrounding muscle groups. Any weakness of these muscles due to cerebral, spinal or peripheral nerve disease or other causes or to inherent myopathy will produce a weakness, laxity or undue mobility of the joints in question. In poliomyelitis, for example, with atrophy of surrounding muscle groups it is not infrequent to find subluxation of the hip, shoulder or other joints, a genu recurvatum or flail joints, albeit that the capsules, ligaments and articular surfaces are not involved; and so it appears to me that in joint hypotonia, atony of the muscle groups around the joints render them unstable and hypermobile, a mobility that is increased and exaggerated it is true by relaxation of ligaments and capsules. Finkelstein, however, states that "the only structures affected are the capsules and ligaments of the joints."

Abnormal mobility of the joints is found in varying degrees in many conditions which I have grouped under the following headings:

MUSCULAR AND JOINT HYPOTONIA

1. Congenital: Myatonia Congenita (Oppenheim's Disease)
2. Essential or Primary
   - Mild
   - Moderate
   - Severe
     - a Individual: One member of the family affected
     - b Familial: History of flail or double joints in parents, brothers, sisters or relatives
       Several members of same family affected
3. Metabolic: ..... Rickets
4. Neurological and Myopathic .....
   - Poliomyelitis
   - Multiple neuritis
   - Muscular atrophies and dystrophies
   - Friedreichs ataxia
5. Endocrinological
   - Thymic subinvolution
   - Cretinism
   - Mongolism?
   - Obesity
6. Cerebral .....
   - Imbecility
   - Idiocy
   - Amaurotic family idiocy
   - Cerebral malformation and maldevelopment
   - Cerebral flaccid paralysis
7. Functional .....Chorea
8. Nutritional .....
   - Disorders of nutrition
   - Wasting diseases
   - Chronic infection
   - Disuse of prolonged illness

CONGENITAL

1. *Oppenheim's disease.*—Variously called myotonia congenita, atonia musculorum congenita, myohypotonia, and amyotonia—of the typical kind is a congenital disease, observed in the early months of life; it presents a picture of extreme muscular weakness, seldom complete paralysis, incapacitates the child, affects the lower extremities to a greater degree than the upper without involvement of the diaphragm, facial and cranial nerves and muscles of deglutition. There is a loss of deep reflexes, joint hypotonia, quantitative diminution of electrical reaction without reaction of degeneration, but no sensory disturbance or disturbance of mentality. Sometimes there is hyperextension of the big toe. The disease is due to an embryonal defect of muscle development rather than to a degeneration. Improvement is possible but slow. Permanent cure has not been recorded. Death usually results from intercurrent respiratory disease.

PRIMARY OR ESSENTIAL

2. This includes the group of cases which form the subject of discussion. One or several members of the family may be affected and there may be a history of a similar condition in parents or relatives. Mild, moderate and severe cases are encountered. Progress is good and recovery takes place in later childhood or adult life. Some cases carry the condition throughout their life time.

METABOLIC

3. Rickets is representative of this type of hypotonia. While the osseous changes are characteristic the condition is far from a disease of the bones alone and involves the muscles, ligaments, capsules, mucous membrane and nervous system. In fact, the muscular symptoms are just as characteristic, as common and as constant as the bone changes and often appear before marked changes in the bones are evident. In truth Moore states that abnormal lateral mobility of the knee joint is often the first clinical sign of rickets demonstrable in the legs; abnormal knee mobility is of value in the early diagnosis of rickets and furnishes a means of measuring improvement during treatment.

MUSCLE CHANGES

In other words in rickets we have a joint hypotonia due not only to changes in ligaments and capsules but to changes in the muscles themselves. Still says, "Nor is it only the bones which yield to mechanical influences in rickets; the ligaments are unduly soft and lax, as can be seen in some rickety children in the extraordinary contortions of which their joints are capable; some rickety children can easily put their toes behind their ears and the knee joint can be felt to be abnormally lax. In part the yielding of the ligaments is, no doubt, due to the feebleness and laxity of the muscles which afford but little support to the joints; but it is probably due also to some change at present unknown in the ligaments themselves. Consequently any stress upon the joints is likely to result in deformity in addition to that resulting from bent or fractured bones."

ATONY

I stress the atony of the muscles in rickets as part of the joint hypotonia found in this disease, because I believe that in Essential or Primary Joint Hypotonia the lack of muscular tone plays a predominant part.

ENDOCRINOLOGICAL

4. *Thymic subinvolution.*—In addition to the other characteristics of this type of child Timme says, "The joint elements are not firmly bound together so that they are readily hyperextended even to the point of subluxation in such joints as the mandibular, the shoulder and the metacarpal. The sacro iliac and tarsal ligaments are likewise lax. The extremities hence give the appearance of flails and the body may frequently be contorted in the most grotesque manner."

We have had eleven cases of essential hypotonia examined for enlarged thymus and in two only have we found any suspicion of such, the reports reading:

Raphael, P., Registration No. 153026:

"Enlarged upper mediastinal shadow. Advise therapeutic test."

Victor, R., Registration No. 150839:

"Upper mediastinal shadow, probable thymus, suggest therapeutic test."

Cretinism.—In the typical case there is not only retarded physical and mental development, skin and hair changes, hypertrophied tongue, low temperature, low metabolic rate but also a hypotonic muscular structure resulting in delayed walking, flat feet, pot belly and constipation.

Mongolism.—The musculature is poorly developed and flaccid, the ligaments are relaxed admitting of distortions of the joints. All mongols are flat footed. Mongolism is an anthropological rather than an endocrinological condition and is listed under the latter heading merely as a matter of convenience.

Obesity.—This is often associated with weak and flabby muscular structures and resultant hypotonia.

NEUROLOGICAL

5. The hypotonia in this class of cases is of course part of the general picture of the diseases noted and any discussion of them would be foreign to the subject.

CEREBRAL

6. These are mentioned merely to call attention to hypotonia as part of the symptom complex.

CHOREA

7. In chorea there exists not only incoordination but often a weakness or hypotonia of muscles so great at times as to lead to a suspicion of paralysis.

NUTRITIONAL

8. The diseases noted in the table may all lead to hypotonicity of a degree dependent upon the duration and extent of the disease.

I have touched upon some of the conditions in which muscle and joint hypotonia is found merely to show how different the picture is from the cases of primary or essential hypotonia under discussion.

Essential or primary muscle and joint hypotonia differs from the hypotonia found as part of the other diseases mentioned, in that there exists no evident or apparent physical, mental, neurological, osseous, joint, or other factors, that practically all the joints are involved rather than special ones, that the condition is sometimes familial, that the muscles are appar-

ently normal to sight and touch and measurement, that there is no apparent motor weakness or sensory disturbance, no change in electrical reaction, no change in tendon reflexes, and finally that in the majority of cases improvement or recovery takes place during later childhood or in adult life.

THE PARENTS

Few considerations cause more alarm to parents than the fact that a child of two or three years, apparently normal in other respects, does not walk or stand or walks imperfectly. Sombre thoughts cross their minds and only too frequently the minds of many practitioners who have been taught to look with suspicion upon such cases as due to either rickets or mental retardation.

Holt says, "The physician is often consulted because of backward muscular development, most frequently because the child is late in walking. General malnutrition or any severe or prolonged illness may postpone for several months this or any of the other functions mentioned. When there is no such explanation of the backwardness, a child who does not hold up his head, sit alone, or make efforts to stand or walk at the proper time should be submitted to a careful examination for mental deficiency or cerebral or spinal paralysis but especially for rickets, which is the most frequent explanation of the symptoms." And Still says, "The age of learning to walk varies very considerably in health, but I think it may be said that if a child is free from rickets and other physical disease and makes no attempt to walk at the age of eighteen months, mental deficiency is at least probable."

No one can contradict these authoritive statements, and yet I venture to say that where a physician is consulted because of backward muscular development or because of late walking or standing he will find a hypotonia more frequently than mental deficiency, cerebral or spinal paralysis, and often enough a primary hypotonia rather than rickets.

TIME OF WALKING

While on the subject of walking, let me remind you that there exists the widest difference among different families, regarding the time at which children first walked. In some we find that the children walked at ten or eleven months, in others at seventeen or eighteen months or later. Both are classified as within normal limits. In going into the family history of some of my cases of hypotonia, I found that the older children of the family did not walk "until late," strong presumptive evidence of a similar hypotonia in them as well as in the case at hand.

EASE OF DIAGNOSIS

Like so many other diseases in medicine which admit of a ready diagnosis, if one only thinks of them—pyelitis, diabetes, scurvy—muscle and joint hypotonia will be found more frequently by those who think of and look for it. Given a child of from eighteen months to three years whose appearance is normal and whose mother complains of its delayed or difficult walking, standing or sitting or similar symptoms the first thought in the mind of the examiner should be hypotonia.

That such is not the case is attested to by the fact that many of the cases referred to my class at the Hospital for Joint Diseases came with a diagnosis of rickets, paralysis, mental deficiency, nervousness, or "nothing"—the latter a favorite diagnosis to cover ignorance or satisfy the parent.

CONSTITUTIONAL BEARING

It requires no great imagination to realize what such statements by the physician mean to the mental and emotional status of the parents.

The existence of hypotonia is important not only from the locomotive but from the general constitutional viewpoint. A hypotonia which involves the muscles of the chest renders the patient not only more susceptible to respiratory conditions, but minimizes the chances for recovery in the event of such occurrence. A hypotonicity of the abdominal muscles or intestinal tract makes atonic constipation with its attendant train of symptoms of fermentation and toxemia, a factor of great importance in the care of children. These two examples suffice to explain why so many mongols frequently suffer from and only too often succumb to intercurrent respiratory disease and why rickets is so frequently accompanied by constipation, abdominal distension and pot belly. And in essential hypotonia when not only the extremities but the diaphragms, intercostals, or abdominal muscles are involved, the dangers above mentioned should be kept in mind.

PROGNOSIS

Finally, a few words as to prognosis and treatments. Most of these cases improve or recover, although it may take many years. Those that I have been able to follow showed some improvement under massage, educational exercises, warm baths, fresh air, sunlight, proper hygiene, codliver oil, syrup of iodide of iron, regulated and balanced diet and the use of mechanical appliances. The improvement of these cases with advancing years leads one to the thought that the condition may be due to disturbed metabolism and that with changed and adjusted environment and diet, a betterment of metabolism and improvement of muscular tone follows.

Dietrich writes that, "Herodotus 431 B. C. mentioned the sun bath and recommends it for restoring muscular tone."

I have had only a limited opportunity of using actinotherapy in this condition—some six cases in all—and it has appeared to me that an improvement in the general well being and in the muscle tonus has taken place. I feel that its application by increasing cellular function and activity, enhancing metabolism, and increasing hemoglobin, erythrocytes, phosphorus, calcium and iron, offers advantages for these children and that it should be used wherever available.

I desire to thank Dr. Henry W. Frauenthal, physician and surgeon-in-chief of the Hospital for Joint Diseases, for the opportunity afforded to study and present this material.

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522 West End Avenue.

LEPRA ARABUM OR ELEPHANTIASIS ARABUM

This disease is scarcely known in this country nor is it seen in these latter ages. Avicenna of the eleventh century describes it as follows:

A disease corrupting the complexion, form and figure of the members proceeding from corrupt bile diffused through the body with a hot and dry temperament of the bowels, spoiling their sanguinification and generating this peculiar and specific venenate quality. The propagation of this disease is: a, heredity; b, contact by common conversation or venereal copulation, and c, spontaneously from a proper vice generated or promoted by bad air and diet.

Paulus Aegineta terms it "universal cancer."

Gregory Hostius says: "It is a foul, contagious disease characterized by its cancerous cachexia of the whole habit arising by some fault of the liver and spleen from atrabilious adust humors."

Symptoms: Hair of head, beard, eyebrows and eyelids shed; the look is fierce, ears acuminated, lips thick, nostrils swell outward, face appears full of unequal tubercles of a livid color, veins of the tongue are varicose, the skin is greasy so that water slides off and will not tarry on it, little knobs appear thereunder. The skin may seem like unto that of a deplumed goose. It may be chopped and furrowed like the hide of the elephant or crusted with dry scab and impetiginous eruptions.

Howard F. Damon's description: "It is a disease attacking the lower extremities, producing an enormous, unwieldy, misshapen extremity which rests on the tumefied foot and is burying it beneath the impending mass of swollen and indurated tissue. This form of elephantiasis may attack the scrotum, increasing it in size to such extent that it reaches the knees and may equal in weight that of the whole body. The labia majora in women when affected may be the size of a child's head. The breast may also be affected."

Rasmussen (3) describes its symptoms as follows: first stage, chills followed by high fever, headache, restlessness and an inflammatory process similar to erysipelas extending from the part first attacked. There is marked redness and a deep, firm, edematous swelling. The lymphatic vessels are early attacked and resemble hard cords. The lymphatic glands are swollen and suppurate. The fever lasts one or two days and terminates in copious perspiration. The swelling subsides, pain disappears and the patient gets apparently better. After several months a similar attack occurs. This attack may also disappear. After a third attack the disease passes into its second stage. The swelling becomes stationary. This being slowly developed into the well known deformity termed "elephant leg." There is also an apyrexial form without fever, and but slight pain. Yet the part, nevertheless, increases in size and hardness.

The inflammatory process is taking place in the lymphatic glands and vessels. The red tender bands, the enlarged suppurative glands, the enormous tumefaction of the parts, their hardness which is so different from ordinary edema, and the occasional occurrence of attacks of erysipelas either at the outset or during the progress clearly point to its origin or seat in these organs.

A proper consideration of the representations outlined above of the disease by the different writers perplexes and confuses the mind of the careful reader. Compare the description of lepra arabum by Avicenna with that outlined by Damon or the symptoms described by Hostius with those represented by Rasmussen.

The difference is so striking that one cannot help wondering whether or not they are dealing with one and the same disease. Indeed, it would be a very difficult problem to solve if the descriptions would not bear the same designation. The most conspicuous differentiating point in their outline of the disease is the fact that Hostius describes it as a constitutional affection and dwells chiefly upon the involvement of the hair, skin and almost every organ of the face without even mentioning the lower extremities, while Rasmussen and Damon state that lepra Arabum is an affection of the lower extremities and do not mention any involvement of other organs. How can it be explained?

This seemingly puzzling question can be readily explained by the theory outlined in the introduction of this paper. The fact that the older writers described the disease in the eleventh century and the younger in the nineteenth is enough to explain the difference in the descriptions. During the former period the disease was at its highest point of development. The virus was extremely virulent and capable of producing constitutional symptoms while at the latter period it reached its stage of decline and is, therefore, becoming more or less localized.

LEPROSY OF THE GREEKS OR ELEPHANTIASIS GRÆCORUM

Hippocrates and Galen describe it as an unequal discoloration of the upper part of the skin characterized by white leprous spots sprinkled over the skin, arising from a salt phlegm or other vitiated juices thrown forth of the blood and lodged in the outward parts.

Pliny says, "the disease came to Italy at the time of Pompey, the Great. It started on the face in spots like a small lentil. Soon after the whole body was invaded with tubercules of various sizes and colors, crusted over with a dry and rugged scab which at length turned black and ate the flesh to the very bones."

He remarked that when an Egyptian King was afflicted with this disease, he would order a bath of human blood as a medicine. Very interesting is one of the remedies recommended by Galen and others of his time. He advises the use of the flesh of the viper and believes that this is the best antidote. He relates that wine in which a dead viper was found, was given to a leper with the intention of poisoning him and free him from a torturous life, resulted in a perfect cure. Poterius recites a case of a Dominican Father who was cured by being fed upon the flesh of the viper. It was administered to him in a dry powdered form mixed with sugar and cinnamon, sprinkled among other food. One hundred and fifty vipers were thus used up. Damon's extensive description of this disease does not differ much from those outlined in any modern standard textbook on Dermatology. It is, therefore, unnecessary to repeat it and burden the mind of the reader of this paper.

The bacillus of leprosy was born and had its period of development in ancient Egypt. At the time of

Hippocrates and Galen it traveled to India, China, Australia and the northernmost parts of Europe. It reached its highest point of activity during the medieval period, when it invaded almost every country of the world. Its contagious power must have been very high at that time. At the beginning of the modern period the bacillus became too old to travel and has, therefore, decided to settle down in Norway under the assumed name of "spidalskhed." Its contagiousness at present is not very marked and, following the great law of Nature, it is gradually declining.

The Law of the Creator is compact, firm and unyielding. The astronomer possesses the power of observation, calculation, measuring, and even weighing the sidereal bodies, but has no influence whatever upon their movements. The geologist, botanist and zoologist can solve problems, enter into the secrets of Nature and explain scientifically every puzzling occurrence, but have no power of altering the perpetual course of action.

The physician, however, is the nearest to God. By means of his physical, chemical, electrical and therapeutical agents he can change the course of a disease. He is the commander in chief of such a faithful army of soldiers as hygiene, antiseptics, germicidals, serum therapy, vaccine therapy, hydrotherapy, electrotherapy, heliotherapy, röntgen rays, and radium. With the help of these soldiers he can prevent the evolution of diseases and hasten their period of decline for the benefit of humanity at large.

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1717 Pine Street.

Contributors to the Science of Medicine

William Heberden

The lives of three physicians, Sydenham, Hans Sloane and Heberden, may be said to completely bridge over the uncertain period between old empiricism and medical science. Heberden was the last of this trinity. The lives and careers of Sydenham and Hans Sloane have been sketched. William Heberden, the son of Richard Heberden, was born in London in the year 1710. In 1724 he entered at St. John's College, Cambridge, took the degree of B.A. in 1728, and of M.A. in 1732. He obtained a fellowship in 1730 and then took up the study of medicine. Having taken the degree of M.D. he practised his profession in the university for ten years. He gave an annual course of lectures on materia medica and the specimens collected by him were, in 1750, presented to his college. A few extracts from these lectures may interest our readers as showing the state of knowledge of materia medica of the day and the mode in which the physicians of that period wrote.

Antimony.—Diascorides mentions it had a vogue in physic, but it was not of long date, because it is very dangerous. In about the twelfth age, Basilius Valentinus, a certain monk, published a book which was entitled *Currus Antimonii Triumphalis*, wherein he undertakes to affirm that it was a remedy against all sorts of diseases. Three hundred years after, Paracelsus brought it into vogue; but then in the year 1566 the use of it was condemned by Act of Parliament; and accordingly, one Besnier, a physician—transgressing it—was excluded from the faculty. In the year 1637 antimony was again received by public authority, among the purging medicines; and in 1650 the Act made in 1566 was repealed. In 1657 the faculty caused it to be inserted in their Antidotarium, printed that year herein following the opinion of Mathiolus; and on March 29, 1668, gave it the sanction of public authority, by which graduates were permitted to use it; but with a prohibition to all others, unless by their advice. Among the ancients antimony was used to dye the supercilia, or eyebrows, black; and accordingly we read in scripture, that the wicked Queen Jezebel in order to charm the King, her husband, painted her eyes (by which Heberden supposes is only meant the eyebrows with antimony) and the women who used that practice were also reproved by the prophets; and from thence it was that this mineral got the name of yovaikelov, while some Greek authors mention it thus, *στιμματογραφ*; because it seems to dilate the eyes and make them appear fuller.

It acquired the name of antimony in the opinion of some from the aforesaid Valentine, who, in his search after the Philosopher's Stone, was wont to make much use of it for the more readily fluxing his metals; and throwing a parcel of it to some swine, he observed that they were violently purged by it after they had eaten it, but afterwards grow the fatter upon it, which made him harbour the opinion that the same sort of cathartick exhibited to those of his own fraternity might do them much service; but his experiment succeeded so ill that everyone who took of it died. This, therefore, was the reason it was called antimony, as being destructive to the monks.

In these days when the herbal remedies are little used in comparison with the ancient practice of medicine, but when they seem to be coming into favor

again it is instructive to hear what Heberden has to say on the matter.

Vegetables.—There was a great dispute among the ancients, whether vegetables or fossils were best in physic. The vegetables were more used by the Galenists than Paracelsians. It is idle for us to regard these disputes, for there are extreme good medicines made from them both. Indeed, it was the general opinion formerly, that physicians ought to be chiefly skilled in the knowledge of vegetables; and Virgil hints at it when he says:

"'Scire potestates herbarum Medendi,' though there is little reason to think that vegetables are so universally good in physic, and numbers of them might be laid aside, if it was not for the two grand ingredients Mithridate and Theriaca. Our use of vegetables is greatly owing to our fondness for foreign vegetables, and those which our forefathers used; though the botanists at present are very little regarded by the physicians."

It will be noticed that these paragraphs are marked by numerous classical quotations. Heberden did not confine himself to writers on medicine, Homer, Plantus, Plutarch, Vitruvius, Horace, Cicero, Lucretius, Ovid, Persius, Caluttus, Juvenal and Pliny, all illustrate his discourses.

The physicians of the period in which Dr. Heberden was a leading light, generally possessed a good knowledge of Latin, and some of them of Greek as well. Heberden was an excellent example of the best type of physician of his time. In 1746 he was elected a Fellow of the Royal College of Physicians, and two years later he commenced practice in London. In 1749 he was made a Fellow of the Royal Society and initiated Philosophical Transactions to which he contributed four papers. In 1778 he was elected an Honorary Member of the Royal Society of Medicine, Paris.

It was customary to publish notices of the deceased honorary members of this society in its Transactions, and Dr. Heberden had drawn up an account of himself leaving blanks for the day, month and year of his decease. Here is the account:

"Dr. Heberden died in Pall Mall, on May 17, 1801, at which time he had reached his ninety-first year, and was the senior fellow of the College of Physicians. The serenity of his mind at this trying hour is shown by the recorded fact, that within forty-eight hours of his decease, he repeated a sentence from an ancient Roman author, signifying that 'Death is kinder to none than those to whom it comes uninvoked.' He admirably illustrated the truth of an observation made by the late Dr. Knox, that 'Religion is able of itself most effectually to dissipate the clouds, and to diffuse a sunshine on the evening of life.'"

His resolution to retire seems to have been formed in consequence of the impairment of the faculties of the celebrated Dr. Mead, whom he met in consultation when Dr. Mead was in this condition. It is stated that Heberden, then determined that if he ever lived to the same age, seventy-eight, he would give up practice. He retired in 1782 at the age of seventy-two when his faculties were perfect. His earliest published work was a little pamphlet entitled *An Essay on Mithridatium and Theriaca.* It appeared in 1745. The famous antidote to the baneful effects of poisons said to have been possessed by Mithridates, King of Pontus, is here shown to have been composed of the most simple ingredients: namely, twenty leaves of rue, one grain of salt, two nuts and two dried figs. Dr. Heberden states, that the ancients were only acquainted with three kinds of poisons, hemlock, aconite, and that of venomous beasts, and to these they knew no antidotes.

Dr. Heberden ridiculed the accounts of miraculous stories regarding poisonous substances generally emanating from Italy. Such as the concealing of poisons under the stone of a seal or ring, as reported by Theophrastus, or by vapors arising from perfumed gloves or letters. Many modes of poisoning are mentioned by Heberden, as having been practised by the Italians, among others that of poisoning clothes. However, as Heberden points out that these practices were not confined to Italy but were practised in England, Queen Elizabeth lived in constant dread of being taken off in this way. The poet Rogers alludes to the poisoners of the sixteenth century in the following lines:

> "Misnamed to lull alarm,
> In every palace was the laboratory
> Where he within brewed poisons swift and slow
> That scattered terror 'till all things seemed poisonous,
> And brave men trembled if a hand held out
> A nosegay or a letter; while the great
> Drank only from the Venice-glass, that broke,
> That shivered, scattering round it as in scorn,
> If aught malignant, aught of thine was there,
> Cruel Tophana."

Dr. Heberden was a somewhat voluminous writer; among his contributions to medical literature were the *Epidemical Cold, in June and July, 1767.* Of course, the epidemical cold was an outbreak of influenza.

Hectic Fever—Dr. Heberden was the first writer to expound John Hunter's views that fever was the effect of repeated formations of matter and not of its absorption. *Remarks on the Pulse, Diseases of the Liver, Of the Nettlerash, Angina Pectoris.*

The most important of his works was the *Commentani de Morborum Historia et Curatione.* This book was published in Latin and in English. He had long been in the habit of making notes at the bedside of his patients and every month he used to select and copy out under the correct titles of the diseases whatever he thought particularly worthy of record. In the year 1782 he made a digest of this register into the form of a volume of *Commentaries on the History and Cure of Diseases.*

Heberden was a great physician and his greatness lay, not in original views but in sifting the true from the false, separating the genuine from the doubtful and placing the truth on a firm basis. Cullen often said that there were more false facts in medicine than false theories. Heberden acted on this principle and proceeded with so great care aided by conspicuous ability and remarkable intuition, that his narrative of the symptoms of disease and of the effects of remedies as they presented themselves to his judicial intellect and to his wide experience affords a clear picture of deductions to be drawn from the observations of such men as Sydenham and the Hunters.

So highly did Soemmering consider Heberden's Commentaries that he republished them in Germany. Heberden was a friend and one of the medical attendants of Samuel Johnson.

Editorial Articles

NATIONAL HEALTH

There is plenty of scope for those who practise remedial, curative or preventive treatment. There seems to exist a fear that if prevention of disease is carried to its legitimate limits that the medical man will be restricted in his sphere of practice. In short, that the enlargement of the scope of preventive medicine will prejudice the position of the practitioner. The fear to a large extent is ill founded, and even if the expansion of preventive measures does alter the existing methods of practice, it behooves the members of the medical profession to adopt themselves to the changed conditions, conditions which have inevitably come to stay. As a sign of the times, the publication of a revised edition of an outline of the Practice of Preventive Medicine, written by Sir George Newman, Chief Medical Adviser to the British Ministry of Health, is peculiarly fitting.

The guiding feature and essence of the arguments contained in this memorandum, couched in eloquent and striking language, is that prevention rather than cure should be the goal to be aimed at. That the first duty of medicine is not to cure disease but to prevent. While much progress has been made in this direction, the writer takes upon himself to point out how much greater success can be achieved in the future, and accordingly a national policy is set out in logical sequence. It is the belief of Sir George Newman that heredity and race exert a greater influence upon health than environment.

He gives expression to this belief in the following emphatic words: "If we permit ourselves to favor and provide for the unguided propagation of a population of poor physique or of persons marked from birth with the stigmata of alcohol, venereal disease, or mental deficiency, we shall sooner or later discover that we are building on false foundations." It is pointed out, for example, that feebleminded women are, on the whole, more prolific than normal parents, with the result that this racial malady is being continually passed on.

It is needless to say that the situation, in this respect, is the same in this country and in all other countries. The least fit physically and mentally are reproduced in greatly larger numbers than the fitter, with the result that the tainted in mind and body bid fair to swamp the hale and sane.

In the well to do classes, in this country as in Great Britain, the birth rate has greatly declined. On the other hand, in the poorer—it may be said in the poorest—classes it continues very high; for instance, miners in England have double the birth rate of doctors.

This excessive multiplication of children under conditions which are generally, perhaps, unfavorable to a healthy life is not only a loss to national health but is a menace to individual health, that is, to the health of women who have excessive families. Many women are made invalids for life or lose a large part of their economic value. As a matter of fact, in Great Britain, and in other countries to a less extent, population is increasing at the wrong end. The people who can afford to maintain their offspring and to rear them under healthy conditions are having progressively fewer children, partly because of the increased cost of living, partly from selfishness, and an increasing love of comfort and luxury, and also on account of the fact that parents desire for their children the best that can be had in the way of education and training, so that they may be well equipped for the battle of life. On the other hand, people who are living in crowded slums under unhealthy conditions continue to have multitudes of children, many of whom live to be a burden on and a menace to the nation rather than an asset.

It should be borne in mind that the future of preventive medicine lies largely in domestic and personal hygiene. Public sanitation has abolished in civilized countries large epidemics. The object now is to fight the chronic diseases as rheumatism, which provides a holocaust of victims in deaths and cripples every year. The first step in this campaign is the abolition of slums and the provision of good houses. The next step is the education of the masses, including the well to do, in the principles and practice of personal hygiene, not forgetting that of diet. Personal and domestic hygiene carried out efficiently will result in a lessening of the chronic diseases, and in course of time in the doing away with some. In this campaign the doctor will be the most prominent figure as he must be the educator.

ODONTECTOMIES

Of all minor operations none seems more gruesome and apparently few are, in the present day, more dangerous than that of tooth extraction. Time was when people had a tooth pulled, and with great relief, but this event seems likely soon to be dignified with the term odontectomy, so formal and fearsome it has become.

Dr. George Blumer has called attention, in the

Boston Medical and Surgical Journal, to the "tragedies of tooth extraction," and has given account of some fatal cases which have recently come to his knowledge. Besides these fatal cases there have come to our personal knowledge instances of local infection and abscess formation following this operation. In two of the fatal cases described by Blumer the patients were apparently healthy up to the time of extraction of an uninfected tooth in one and the drainage of a root abscess in the other. The fatalities were, evidently, due to general infection and the process was rapid. The other two cases reported were of persons not in the best of health and several teeth were removed evidently in the hope of improving the general condition. The extractions resulted in nonfebrile processes of an infectious nature affecting the liver and the kidneys.

It is the practice nowadays of dentists to do considerable curetting about the sockets from which the teeth have been removed, and this would seem to increase the possibility of the development of abscesses in the neighborhood as well as of local infection elsewhere or of general toxemia. Sufficient trauma is occasioned by the removal of the tooth without adding insult to injury by means of the curette, especially since there is ample opening for discharge of infected material from the jaw.

The removal of teeth should not be recommended without the most careful consideration of the general condition of the patient and as to whether he is likely to be benefited—in other words, whether the cure thus conceived may not prove worse than the condition of which he complains.

Dr. A. E. Taussig speaking before the St. Louis Dental Society on Focal Infection from the Teeth and Internal Medicine said: "If I were to sum up my feeling about this entire problem, it would be somewhat as follows: 1, Patients with apical abscesses and systemic disease apparently due to focal infection should not have any useful, even though infected, teeth drawn until other foci, especially in tonsils, sinuses and prostate, have been investigated and eradicated. 2, Even where it seems entirely probable that the focal infection is in the teeth, the gravity of the systemic infection must be weighed against the handicap involved in the loss of useful teeth. I have repeatedly seen patients made utterly miserable on account of the loss of chewing power and the inability to have dentures in their mouths, when their condition had been entirely bearable before the teeth had been removed. 3, In cases in which there is no systemic disease, or only a trifling one, that can definitely be ascribed to focal infection, the problem becomes a purely dental one. In such patients, useful teeth, even though pulpless or evidently infected, should not be sacrificed merely to prevent possible later systemic disease. I have seen this done repeatedly and with deplorable results."

Strangely enough he believes that "pyorrhea, caries and the like, however important to the dentist, have no bearing on systemic infection." This is quite a different tune from that we have been hearing on this subject.

ANAPHYLACTIC ASTHMA

A certain similarity between the accidents of anaphylactic shock and the asthmatic paroxysm has for some time past attracted attention. There is the same sudden onset and violent dyspnea as in asthma with a slow respiration and dilatation of the thorax with forced inspiration. The bronchial and eosinophile cells described by Besançon and de Jong in the pearly sputum of asthma have also been found by Schlecht and Schwenker in animals dead in a state of anaphylactic shock.

Etiologically, essential asthma develops—like hay fever—from the presence of microspores and animal or vegetable dust. The proximity of a stable or a field are enough to render a place unhealthy for an asthmatic subject. The quantity of these substances sufficient to produce an asthmatic paroxysm may be merely a few aberrant grains. These pollens and dusts are albuminoids, all substances particularly qualified to produce the anaphylactic attack.

Urticaria—whose anaphylactic origin is distinctly demonstrated—is frequently encountered in asthma during the paroxysms or their intervals. In the asthmatic, the specific substance may be introduced by either the respiratory or digestive tracts. An error in diet is often quite enough for provoking an attack.

Now, it is common knowledge that anaphylaxis can be induced by both these tracts. Infection likewise plays an important part because out of a total of 775 cases collected by Percepied, in 190 the first paroxysm succeeded an infection. Occasionally asthma may be hereditary and we know that the anaphylactic state can be transmitted from the mother to the fetus.

Finally, it has been noticed that certain drugs, such as ataspine, calcium chloride and adrenalin exercise a remarkable action both on the asthma and anaphylactic accidents.

In spite of these similarities, the proof of the anaphylactic origin of essential asthma was wanting until 1914, when Widal and his coworkers demonstrated the fact. They observed the case of a sheep dealer who, although having lived among these animals since the age of twelve, only developed his first paroxysm at the age of forty-seven years. At first the attacks occurred only in summer but afterwards continued throughout the year.

By placing this man in an atmosphere filled with the odor of sheep experimental attacks were produced, each one being preceded by a true hematic shock, characterized by a marked leucopenea, a fall in the blood pressure, an increase of the blood coagubility and a decrease of the refractometric index of the blood serum, all these being precursory phenomena met with by these observers in other anaphylactic reactions, such as paroxystical hematuria or urticaria.

The vasculosanguineous attack, or hemoclastic shock, which clinically characterizes all these states, was present in this case with all its component elements so that the anaphylactic origin of the asthma was patent, but it remained to determine the nature and variety of substances to which the subject was sensibilized and this is one of the most complex problems of the process. However, certain results have been obtained by subcutaneous injections of certain albumoids and by the intradermic, ophthalmic and cutireactions.

Landouzy regarded asthma as due to larvate tuberculosis, supposing that the paroxysms were anaphylactic phenomena due to a release of tuberculine, and Heckel affirms that twenty-five per cent. of asthmatic patients are tuberculous, but he very justly remarks that it is evident that—given the frequency of tuberculosis—if all the various manifestations of this disease were sufficient to produce asthma, nearly all human beings would be asthmatic.

In asthma, the anaphylactizing causes are both varied and numerous. Besides the possible action of the bacillus of tuberculosis, pulmonary actions must be added, namely: 1, *mechanical* (compression, inflammatory cicatrices, lymphnodes, etc.); 2, reflex; 3, anaphylactic from ordinary bacteria; 4, alimentary anaphylactics (especially milk, eggs and bread); 5, cutaneous animal protein anaphylactics (horse, sheep, cat, birds, furs, woollens), and lastly, that determined by pollen which plays such an important part in hay fever, and certain dusts. It is the multiplicity of these factors, several of which may act in a single case, that makes specific antianaphylactic treatment of problematical efficiency. The elimination of one or several of these factors is not always sufficient to produce a cure of the asthma as long as other causes still exist.

Hence tuberculosis cannot alone be incriminated as the only cause of asthma, although it is frequently met with in this disease.

To Walker especially is due the credit of demonstrating the various albumins to which asthmatics are sensibilized. He employed the cutireaction with various albuminoid solutions and found the fifty-five per cent. of asthmatic subjects are sensitive to one protein while some are sensitive to several. A curious fact is that these subjects are sensitive above all to albuminoids derived from the horse, but others react to other animal or vegetable albumins, particularly to proteins derived from wheat and vegetable meals, pollen, eggs, and less commonly those from milk, meat, potatoes, woollen and feathers. Numerous asthmatics have been sensibilized by bacterial products extracted from sputum, the intestine or alveodental suppuration.

We would remark that the question of essential asthma is not entirely dependent upon anaphylaxis. Widal, Abrami and Brissaud have shown that the phenomena of *protein shock* may follow a first rather strong injection of some heterogeneous albumin or even a crystalloid substance. Cold and fatigue may produce changes in the colloidal complexes and by themselves produce an hemoclastic or colloidoclastic shock. Menstruation, pregnancy, lactation, and the menopause possess an undeniable influence on account of the humoral changes arising during these phases of female genital life.

We know that asthmatics are hypervagotonic subjects. Lion and Catuala found a positive oculocardiac reflex present in all their cases, a phenomenon denoting hypertonia of the pneumogastric. There is, evidently, a special susceptibility—constitutional or acquired—of the cells of the bulbar physiological centre of the inspiratory muscles, so that any shock acting on the origin of the vagus exalts its bronchospasmogenous function.

Heckel points out that many asthmatics present disturbances of the great sympathetic, so that it does not seem possible to regard asthma solely as a functional disturbance of the vagus, but rather of the vagosympathetic system.

ACCESSORIES FOR HEALTH

In every sickroom, in every hospital ward, there is introduced an agent for good which is neither medical nor surgical, which is prescribed by no school, regular or irregular, nor yet forbidden by any. We refer to nothing more uncommon than flowers. It is the uncommon and bizarre that has usually made up our armamentarium and yet that is not true in this case.

Possibly we should be cautious as to their ever blessed influence and make the exception of certain flowers for hay fever victims; but these are really without the pale, for the hay fever patient is not quite ill enough to deserve flowers and he is usually such a cantankerous customer that no one would think of offering him any. Flowers are for patient and more silent sufferers and for those ill with ailments which are known to sometimes sever the silver cord.

How do flowers work their will upon us? It were a long and involved story, though we doubt not a

most fascinating psychological tale running into all sorts of associational nooks and corners, the secret passages of which are open sesame to appropriate perfumes. The author of the stageworn soliloquy about the effects of a certain jasmine flower could, perhaps, have traced out for us something of the machinery set in motion by a bouquet. At any rate, the idea of a friend goes with both sight and sound of a rose and, as someone has wisely remarked, what every patient most needs is a friend. Just what emotional echoes are aroused by the secondhand flowers sent from a church we should not guess, but it is safe to say that their power for good is not of the highest potency.

In hygiene, also, flowers flourish, for who does not, if he can afford it, seek the lunch room which displays a blossom and a bit of Nature's greenery on its tables. The food tastes better and must digest better and we feel better. One touch of Nature makes the world kin, and whether we are well or ailing nothing makes us so cognizant of our place in the general scheme of things and in our belief that that scheme is managed for good, as its most delicate of structures, the fragile flower. Even the great teacher of centuries ago drew lessons from the scarlet flowers of the field.

If flowers minister to the sick in body, they minister even more to the sick in soul who see their friends undergo dissolution—change. The flowers that never reached the patient in life we feel must reach him in death and bridge the chasm. In the meantime, when humanity feels most frail, the frailest and fairest of the things about us offers more of hope than all things, huge or strong. The flowers we offer to those beyond may wither also in our sight but bloom for them always in fields elysian.

Obituary.

F. R. S. SIR WILLIAM LEISHMAN, K.C.M.G., K.C.B., COMMANDER OF THE LEGION OF HONOR DISTINGUISHED SERVICE MEDAL, U. S. A.

Lieut. General Sir William Leishman, Director General British Army Medical Service, passed away on June 2, 1926, at Queen Alexandra's Military Hospital, Milbank.

Born in 1865, he was the son of Dr. William Leishman, professor of midwifery in the University of Glasgow. He was educated at Westminster School, London, and the University of Glasgow, where he graduated M.B., C.M., in 1886. He entered the Army Medical Service as surgeon and was gazetted captain in 1887, major in 1899 and brevet lieutenant colonel in 1905, having served in the Waziristan Expedition of 1894-5. During this period he devoted himself to the study of bacteriology, more especially with regard to tropical medicine, and on his return to England in 1900 he was appointed assistant professor of pathology at the Army Medical School, Netley. He served there for three years and was then made professor of pathology in the Royal Army Medical College at Milbank, London. This post he held from 1903 to 1913. He was elected a Fellow of the Royal Society in 1910, and in the following year he served as president of the Society of Tropical Medicine and Hygiene, and in 1912 he was appointed honorary physician to the King. From 1913 to 1915 Leishman was a member of the Yellow Fever Commission, West Africa, and he acted for a time on the Medical and Sanitary Advisory Committee for Tropical Africa, while for ten years he was a member of the Medical Research Council. After he became the head of the Army Medical Service he still continued his scientific pursuits. He became chairman of the Foot and Mouth Disease Research Committee appointed by the Minister of Agriculture. Quite recently he was elected president of the Section of Comparative Medicine of the Royal Society of Medicine.

Sir William Leishman will be remembered as one of that small but brilliant body of men who in the space of a few years built up the modern science of tropical medicine and who have done so much to lessen the dangers of the tropics for white men. In this work American medical men of science have also played their parts well. But this work was not Leishman's only claim to fame. He was a pioneer in the cause of improving human health. Perhaps, indeed, his greatest claim to a niche in the hall of fame will rest upon his researches into the cause and prevention of typhoid fever and the results therefrom. Together with Sir Almroth Wright he produced vaccination against typhoid fever. Although their views were at first scoffed at, the great war brought their triumph. As everyone knows in the last war typhoid fever, which had been the scourge and menace of armies in the field from time immemorial, was practically eliminated.

Leishman's other great contribution to medical science was his work in connection with that group of diseases which now bears his name, Leishmaniasis." Before he began his investigations in this direction it was not known that a relationship existed between the Indian kala-azar, black sickness, the Oriental sore socalled, and the Mediterranean type of kala-azar. Leishman in 1900 discovered a body in the blood of a soldier affected with Indian kala-azar which was given the name of the Leishman-Donovan body. This minute parasite is now established as the cause of Indian kala-azar and a similar parasite causes the Mediterranean form of the disease and also Oriental sore or Baghdad boil. Kala-azar is one of the most dreaded of Oriental diseases, but owing to the work of Leishman and his coworkers the cause is known and a method of treatment has been devised.

Leishman was as good an organizer and administrator as a man of science. He was modest and retiring but a good teacher because he possessed the faculty of explaining his results in simple language and the manipulative skill to demonstrate the facts upon which they were founded. His untimely end is a loss to pathology and tropical medicine.

BELLEVUE HOSPITAL IN 1920

Bellevue Hospital

M. W. BROWN, B.S.

New York

In March of the year 1714 a proposition was made to the General Assembly of New York that a "poorhouse" be built. During the previous winter suffering among the poor had been extremely great, and it had been discovered by the church wardens, who were charged with their care, that they were actually perishing from want of food and clothes. So New York City borrowed one hundred pounds sterling for their support for six months. A committee of six members of the Common Council was appointed to consider the matter of a poorhouse. It was twenty years, however, before any decisive steps were taken.

The census of 1731 shows that New York City then contained 1,400 houses and had a population of 8,628. There were many poor, including a large number of vagabonds, beggars and criminals. In the same year the city suffered its third epidemic of smallpox. But not until November of 1734, during the mayoralty of Robert Lurting, did the Common Council appoint a committee to inquire where a house suitable to be used as a workhouse for relieving these conditions might be purchased. In December this committee recommended that such a building be erected on unimproved lands belonging to the city near the estate of the late Colonel Dongan, known as the Vineyard. It was to be called the Publick Workhouse and House of Correction of the City of New York. The site was that upon which the old City Hall now stands. The building was begun in 1735. The committee agreed with John Roomer for carpenter work and materials at a cost of eighty pounds sterling, and fifty gallons of rum, the corporation "to be at the charge for liquor for laying the beams and raising the roof." The building was ready for occupancy early in 1736. And so Bellevue Hospital, whose origin was in this early structure, can lay claim to a history covering nearly two hundred years, and call itself the oldest hospital now existing in the United States.

This old building was fifty-six feet long and twenty-four feet wide. It was two stories high, with a cellar. In the cellar were rooms for those sentenced to "hard labor," and weaving, spinning and carding; a storeroom for provisions; and a "strong room" or cage for the refractory. On the first floor was the dining room; upstairs were rooms for the "keeper" and his family, and an infirmary "to be used for no other purpose whatever." This room, about twenty-five by twenty-three feet in area, on the Broadway side of the building, was the primitive beginning of Bellevue Hospital. It contained six beds. Its first medical officer was Dr. John Van Beuren, whose salary was one hundred pounds a year,

out of which he was expected to supply his own medicaments, drugs, and instruments.

Let us quote briefly from Dr. Robert J. Carlisle's Account of Bellevue Hospital, in the Society of Alumni's Catalogue of the Medical and Surgical Staff: "We would like to have a glimpse of what this hospital was like when its ward was filled; but no clinical record has been left us. It was not the custom in those days to keep very extended or accurate histories. If we could have entered the ward when Dr. Van Beuren was making a visit, however, we would doubtless have seen faces not very strange to a Bellevue man of today. Here is an old and infirm Dutchman, perhaps; there a Frenchman, next an Irishman, and next, perhaps, Lo, the poor Indian, occupies a bed in which today we find John Chinaman. What are the diagnoses? Here are bronchitis and asthma, lues venerea, peripneumonie also, and dropsy of the chest. How did the doctor treat his patients? Let his record tell. Dr. Van Beuren was a Dutchman, born in the city of Amsterdam. He came to this city in the early years of the eighteenth century when twenty-two years of age, a graduate of the medical school of Leyden, and a pupil of the illustrious Boerhaave. . . . He was succeeded by his younger son, Beekman, who held the position at the outbreak of the Revolution. . . . We may be sure that his patients were treated upon the wisest and most enlightened plan. The era of hospital building was just setting in in Europe, and when we remember that his renowned preceptor was one of the first to teach that strict cleanliness and pure air, with simple buildings, are the first and truest principles of hospital management, we may feel assured that the young hospital had been entrusted to proper hands. In those early days the little city of New York had many more than her share of a class of individuals which is not yet entirely extinct, persons who demand of the public both its money and its life. The quacks and charlatans far outnumbered the real physicians. It is said that in 1745 there were at least forty socalled physicians and surgeons in the city, which then had a population of about nine thousand, very few of whom indeed had ever seen the inside of a medical school. . . ."

COL. EDWARD B. DALTON
Surgeon, U. S. A.

The first superintendent of the house was John Sebring, whose official title was Keeper of the House of Correction and Master of the Workhouse and Poorhouse. He lived in the house with his family, and drew a salary of thirty pounds a year, with board and lodging. He had in addition certain privileges and advantages, such as these: for a shilling entrance fee, and seven pence a day for "keep," he received refractory servants and slaves; whipping and other punishment cost one shilling, sixpence, extra, and for discharge another shilling was charged. We find it recorded that in 1764 the keeper received an increase of twenty pounds since there had been no whipper in the house for some time.

"Under this narrow roof," writes Dr. Carlisle, "were confined the maniac and the unruly, the poor, the aged, and the infirm. But 'workhouse' was no misnomer. The vicious were put to hard labor for the common good." An industrial school was carried on for instruction in needlework, knitting, spinning and weaving, and work in iron and leather; a cultivated plot gave opportuities for learning gardening. The teaching was done by inmates who had practiced the various trades taught.

The sanitary condition of the house must have been good. The site was a healthful one, on the outskirts of the city, for in those days Cortlandt Street marked the western city limit, King's Farm was on the north, and to the south and east, at quite a distance, was Beekman's Swamp, which about 1740 was drained and cultivated. On the present Park Row, extending northward and eastward, was the High Road to Boston. Between this and Broadway, on what was called the Commons, stood the almshouse. In 1745 stockades were built for protection against the French and the Indians. These commenced at Mr. Desbrosses' house in Cherry Street and ran in a straight line to Windmill Lane, thence across the city behind the poorhouse to Dominie's Hook, North River. Near the almshouse grounds, but outside the stockade, was a powder house.

Nothing further of consequence is known about New York's first hospital until the time of the Revolution. In 1776 the inmates were transferred to Poughkeepsie until the close of the war. The house was then taken over by the British for the "poor and refractory." After the great fire of September 21, 1776, about three hundred destitute were admitted. A daily paper of the period contains an order sending half a dozen English soldiers, unarmed, to convey an insane woman to the hospital. After the evacuation of the city in 1783, the inmates were returned from Poughkeepsie, and several new buildings were erected to meet the increasing numbers of those needing accommodation.

By 1794, the house had become entirely inadequate for its purpose, and in 1796 a new one was built in the rear of the old building on what is now the north side of Chambers Street. This served its purpose until 1811, when the third almshouse was built, from which time the hospital became the most important department of the institution. On April 17, 1811, during the mayoralty of De Witt Clinton, a special meeting of the Common Council was called

Bellevue Hospital Ambulance No. 3

to consider the purchase of a site for a new almshouse and penitentiary, on an elaborate scale. The site offered was a part of the old Kip's Bay Farm containing about six acres, bounded on the north by what is now East Twenty-Eighth Street, from Cornelius Street to the East River, on a line with the present Second Avenue, thence to Maria Street, between the present Twenty-sixth and Twenty-seventh Streets, to the northerly line of "Belle Vue Place," which already belonged to the city in fee simple. The location itself, the site of the present Bellevue and Allied Hospitals, has a history of unusual interest. In 1765 the property was sold by Peter Keteltas to Jacobus Kip, who conveyed it to Martin Hoffman, who in turn conveyed it about 1772 to Robert Leake, who gave it its name, Belle Vue. In 1783 Lindley Murray came into possession of the site. At the end of the war, he returned to England to live, having sold the property to Brockholst Livingston, who leased it for six years to Nicholas Devise. In 1794 Robert Lenox, a member of the City Board, purchased the property for ten thousand dollars. Dr. John McFarlane, by order of Richard Bayley, Health Officer of the Port of New York, was placed in charge of the grounds when an epidemic of yellow fever threatened the city. This raged until residents fled the town and business was seriously handicapped. Belle Vue was totally unable to care for the victims, and a new "pesthouse" was established on Bedloe's Island. During the summer of 1796 more than seven hundred deaths occurred, and the fever continued until Belle Vue was practically abandoned and the whole city quarantined. The decision to purchase this property for a new hospital and penitentiary was made at the meeting above mentioned, and the sum of three thousand five hundred dollars an acre was paid for it.

No sooner had building been commenced than war with Great Britain was declared, so the work was practically stopped, not to be resumed until the war was over in 1814. On April 22, 1816, the Bellevue committee reported the buildings as ready to receive their guests, and they were formally dedicated and opened on the twenty-ninth. The building material used was Gneiss rock, found on the spot and in the vicinity. The central building had originally three stories, and a north and a south wing. It contained sixty rooms, forty of which accommodated the paupers, a chapel, two dining rooms, a tailor's room, in one of the wings two cells, and the lying-in wards, one for white persons and one for colored. Back of this structure were two more buildings, a workshop three stories high of wood, and a penitentiary of stone. In the former on the first floor the male paupers did weaving; on the upper floors were school rooms and rooms for spinners and leather workers. In the basement women from the prison picked oakum, the white in one room and the colored in another. There was also a Sunday school. North and south of this group of buildings were the hospitals of brick, seventy-five by twenty-five feet, one for male and the other for female patients. Each building contained six rooms. In addition to these structures there were a "dead house," two engine houses, the superintendent's house and garden with a number of outbuildings, a bakehouse, soap factory, carpenter shops, smithy, barns, and houses for stewards, gatekeepers, etc. The cost complete in 1818 was $421,109.56. The whole was enclosed with a ten-foot stone wall and was known as the Bellevue Establishment.

The first addition was made in 1819 at the time of the yellow fever epidemic, when a new hospital was established under the charge of Bellevue physicians at old Fort Stevens on the Long Island shore near Hell Gate. Three years later it was decided that the "fever hospital" should be at Bellevue itself, so additional property was purchased and a four-story stone structure erected. The pauper insane were housed on the first and second floors of this building, and the contagious cases on the fourth. The third was devoted to the staff. At about this time the two brick pavilions formerly used by the medical department were transformed into children's wards.

In spite of the heavy load of duties which they carried, the Bellevue physicians of that day found time to contribute valuable information to the medical press. To quote once more from Dr. Carlisle: "Drake and Brown stand out most prominently among them in this respect. A case of anthrax occurred in the hospital in the summer of 1817, and was treated by incision, and three or four more cases occurred during the next three years. These were reported by Drake in the *Medical Repository*. Brown in 1821 reported a new mode of bandaging fractured clavicles. It would appear from this that Dr. Brown had both medical and surgical services during his tenure of three years. Again in 1825 he reports two cases of fractured patella, one of which was the result of an attempted escape from the prison. A case of dystocia from exotosis of the os ischium, with rupture of the uterus, is another report by Drake. An account of a disease which prevailed in the penitentiary during the fall of 1825 was published by Dr. King, and remarks on delirium tremens, or the "irritative fever of drunkenness," by Trippler. These will serve to show something of the range of cases coming under care in the hospital at that time. But what occupied the attention of the medical staff to the largest extent was the infectious fevers. Yellow fever in 1819 presented its oldtime virulence. Out of a population in the city of 123,706 there were 3,815 cases reported by the Board of Health records. Only five fatal cases occurred at the Fort Stevens pesthouse, however. These are commented upon in a paper by Dr. Drake, printed in the journals of the time. This disease raged again in 1822. The Bellevue physicians looked upon the disease as a noncontagious one, as did also Dr. Douglass of the old Bellevue Hospital in 1796." (It is interesting to remember here that the mosquito origin of yellow fever was not proved until 1900; the date of Dr. Carlisle's history is 1893.) "It was typhus fever,

however, that caused the most havoc in Bellevue. . . . It occurred at three different times—in 1818, 1825 and 1827. The first epidemic was the most severe; it caused many deaths, in both the prison and the almshouse, and it was of a much more asthenic type than the later ones. The death rate is given as one in ten or twelve. . . . Job Young was a colored man in ward five of the hospital, and he was grievously ill of typhus on April 20, 1818. He was in extremis, and an order was given that he be put into a coffin as soon as he died, that his bed might be used by the next patient. It was a short space till this was done, and the coffin was placed with four or five others in the hall, preparatory to removal. Several people passing through the hall a half hour later were startled to hear groans from the pile. Running into the ward a hatchet was procured and the man was soon found. He was alive. He was placed in bed, the doctor called, and every effort made to revive him, but in vain. He lived an hour and a half longer, and returned to his narrow house. This is a glimpse in at the window, and speaks for itself. On investigation, it was proved to be due to the carelessness or ignorance of attendants; and, it may be added, to the excessively difficult and laborious nature of the service. It was ordered that thereafter no body should be removed until the physicians had first pronounced the person dead."

Alms House Hospital in 1848—Bellevue

In 1825 the second epidemic of typhus broke. Dr. Belden and Dr. Drake were both stricken, the former fatally. The epidemic prevailed for four months. At this time came a turning point in the history of the hospital. The Common Council appointed a committee of physicians to investigate conditions at the Bellevue Establishment without delay. A most unfavorable report was made, and the committee of the Council was told some plain truths. They were informed that they were in reality administering a large hospital, whereas they imagined they were conducting only an almshouse and a prison; and the board was convinced that the two must be separated without delay. The Council acted promptly on this advice, and the committee was requested to take immediate charge of the institutions. Changes in the prison and hospital administration followed, and the disease was stamped out for the time being. Dr. Isaac Wood was at this time appointed to the position of visiting physician, and through him many important changes came about. The medical staff was entirely reorganized, and the office of visiting physician abolished and that of resident physician inaugurated. Two assistants resided in the house with him, and all were placed nominally under the direction of a consulting physician and surgeon. Dr. Stephen C. Roe was the first to hold this office. Dr. Wood served for seven years, and succeeded in replacing the struggling hospital on its feet. From this time on it was known as Bellevue Hospital.

The worst plague that ever visited the hospital was in Dr. Wood's regime. This was the visitation of Asiatic cholera in 1832. One-sixth of all the victims in the city came from Bellevue Hospital. There were approximately six hundred deaths at the hospital out of two thousand cases. The disease entered by way of Canada. Forty bodies lay at once in the dead house, because the dead fell so fast that there were not enough living to bury them. Dr. Wood in making rounds had to step over the dead and dying laid out in rows on the floors of the wards. Patients were stricken so suddenly that there were no beds available. Dr. Wood himself contracted cholera and recovered, but the after effects of his illness made it necessary for him to resign his office at the end of a year.

The next fifteen years of Bellevue Hospital were the worst in its history. It was enwrapped in the tentacles of a political octopus and was accounted one of the most prolific spoils of office. The mortality during this period was at an average of twenty per cent. Perhaps it will be wise to pass over these darkest pages of the hospital's history. Those who are interested to know more will find the text of a report made by a commission, appointed to investigate conditions in 1837 by the Common Council, in *Records of the Board of Aldermen,* Document No. 32. In an attempt to remedy conditions, Dr. Benjamin Ogden, who had had successful charge of the hospital for the year previous to the second epidemic of cholera in 1858, was recalled. He accepted the call and arrived at Bellevue on May 13, 1837. The night before he came, he tells us in his report, also printed in the document mentioned above, eight nurses and servants, all of whom were at that time detailed from among the prisoners, had escaped from the grounds, leaving their patients to take care of themselves. "The whole concern was filled with typhus from top to bottom," the report adds. "They were lying in their filthy blankets, destitute of sheets and pillow cases, and in some cases they had not had a change for three months. Requisition had been

made by my predecessor again and again, but no notice had been taken of it. No clothing for the patients—not a change was to be found, and there had not been any Indian meal for poultices for three weeks, and no rags to dress the wounds." Dr. Ogden remained in charge for four months and in that time succeeded in restoring the hospital to the excellent condition in which he had left it in 1835.

The time had now come when it was necessary for the hospital to throw off its encumbrances in the form of the many auxiliary institutions it was maintaining. The first to go was the penitentiary, which was moved to Blackwell's Island in 1836. In 1837 the smallpox patients followed, and in the following year female prisoners were transferred to the Tombs. In 1839 the insane went to Blackwell's Island, and in 1848 the almshouse was transferred. The medical supervision of all these institutions, however, remained invested in the Bellevue staff, and her resident physician was supposed to direct the whole.

Up to 1847 the history of the institution varies little, with its tale of the ever present typhus, culminating in the fearful epidemic of 1847-1848, which carried off many of the hospital staff. Matters again became so deplorable that "Jimmy" Wood, well known physician politician of the time, made efforts to stir up the authorities to action, and the *Evening Post* published a series of letters describing conditions. These letters were signed "G" and were written, so it is believed, by Dr. J. H. Griscom, at one time head of the Health Department. The outcome of the agitation was the appointment of another commission of medical men, to report on conditions and present a plan for reorganization. The members of this committee were Dr. John W. Francis, Dr. James R. Wood, Dr. Joseph M. Smith, Dr. Valentine Mott, Dr. James R. Manley, Dr. F. Campbell Stewart, Dr. Willard Parker, Dr. Stephen R. Harris, Dr. Gunning S. Bedford and Dr. Benjamin Drake. They drew up a plan which was finally adopted; a board of visiting physicians and surgeons was created and placed in authority over the resident physician, and so began the end of the rule of resident physicians. A new medical board was organized, which published its first Annual Report for the year ending December, 1849.

The next important step was the establishment of medical instruction. The socalled Griscom letters in the *Evening Post* had referred to the exceptional opportunities along this line that Bellevue could offer, and an article in the *New York Journal of Medicine* states: "Bellevue Hospital, with its one thousand patients, must be made accessible to students of medicine, and that too without delay. It is a crying shame that such a wide field for clinical instruction should be actually lost to the city, to science, and to the world, merely to subserve paltry party political purposes. . . ." The earliest reference to public instruction in the hospital is to be found in a note in the *Medical Repository* for 1804, which states the fact that a lying-in ward had just been established in the almshouse, and that, as a sufficient number of cases occurred there, Dr. Valentine Seaman had begun a course of lectures on "the obstetric art, including anatomy, physiology, and practical parts, and as this establishment is particularly and exclusively devoted to the education of females, it will be easy for women who practise or intend midwifery to avail themselves of it." One of the members of the first Medical Board gave a course of clinical lectures to a small class in 1844, and this custom was continued by various members until 1852. The new Medical Board had hardly been in power a year before an ampitheatre was planned and formally opened in 1849. The clinic was surgical, with Dr. William H. Van Buren as operator performing a lithotomy. Notice was then given that thereafter students would be admitted without charge to attend clinical lectures on Friday afternoons, and that such clinics would be held by one of the visiting medical or surgical officers of the hospital. A summer course for April, May, June and July was also given.

Within the next few years care and treatment at the hospital improved greatly, and the influx of patients was so great that additional accommodations were a necessity. These were gradually supplied, even to the building of a new "dead house," the upper floor of which became the Wood Pathological Museum. In 1857 the neglected problem of medical instruction was revived, and Dr. Wood announced at the opening of the lecture room in the new pathology building on October 19th that the Medical Board had inaugurated a new era in medical instruction and that the series of lectures instituted would be the first systematized course of clinical lectures ever delivered in this country. (The first clinical instruction in the United States was organized by Dr. Thomas Bond in the Pennsylvania Hospital in 1776.) Tickets for admission to this course were to be had by medical practitioners and students on payment of a fee to the Medical Board. This plan operated for three years only, because in 1860 the old board of ten governors was superseded by a new board of control called the Board of Commissioners of Public Charities and Correction. Among other changes the new board recommended the establishment of a medical college at Bellevue Hospital, which should be "independent of a mere hospital for clinical teaching, thus making it one of the best hospitals and medical schools in the United States, nay, in Europe." These plans were agreed to, and on April 11, 1861, the commissioners gave permission for the erection of a building, and Bellevue Hospital Medical College was the outcome. The First Annual Announcement and Circular, Bellevue Hospital Medical College, New York, 1861-'62, was published in 1861. It contains pictures of the hospital and of the Blackwell's Island buildings, necessary information for becoming a student, opportunities to be had, etc., and closes with a brief paragraph on, Expenses of Living in New York, Etc., from which it may be of interest to quote. "The expenses of living in New York will of course vary according to the views and habits of the student. Comfortable board and lodging may be obtained for from three dollars to five dollars per week. The *necessary* expenses of attending a course of lectures need not exceed $225, exclusive of traveling expenses, and money expended for books, instruments, etc. Students are requested to report at once, on arriving in the city, at the office of the College, at Bellevue Hospital, and pains will be taken to secure for them comfortable accommodations. . . . The gate keeper at the Hospital on Twenty-sixth Street will direct to the office of the College."

The Civil War all but demoralized again the work of the hospital, which had been becoming more and more efficient even in the face of so many obstacles and set backs. Practically the whole staff enlisted. In 1866 the Metropolitan Board was organized, with jurisdiction over New York and Brooklyn, Newtown, Flushing, Jamaica and the whole of Richmond and Westchester counties. Dr. Dalton, formerly Colonel Dalton, who had been in charge of the Depot Field Hospital of the Army of the Potomac at City Point on the James River, was appointed Sanitary Superintendent. It was during this service that Dr. Dalton had the idea of applying to civic conditions the main principles governing in a field hospital the transportation of the wounded. And so the ambulance came into being. His scheme submitted to the Commissioners for the organization of an ambulance corps was accepted, a competition among carriage makers for the best ambulance plans was announced, in which the Abbott-Downing Company was successful, and on June 30, 1869, the Medical Board of Bellevue held the first examination for ambulance surgeons. During the same month the first city ambulance service in the world was inaugurated. Eight years later other New York hospitals followed Bellevue's lead in this respect, the New York and the Roosevelt Hospital in 1877, St. Vincent's in 1879, and the Presbyterian in 1880. The corps at first had two ambulances, but these were soon entirely too few, so in 1870 five more ambulances were added. This was the year when the new Reception Hospital in Centre Street was opened.

SCHOOL FOR NURSES

The next important step in the history of the hospital was the establishment in May, 1873, of the New York Training School for Nurses Attached to Bellevue Hospital, under the sanction of the Medical Board, by a committee of women of the State Charities Aid Association. Dr. Carlisle writes: "Neither the practice of antisepsis nor the application of modern sanitary laws, nor both together, could have brought the hospital to its present efficiency if it had not been for the Bellevue Training School; indeed neither of these is practicable except by means of intelligent agents. Prior to the establishment of this school, the nursing of the sick was scarcely superior to a pretense. The nurses, or rather those employed as such, were nearly without exception to the last degree incompetent. They were ignorant, indifferent, dishonest; they were eye servants. Sairey Gamp and her partner, Mrs. Prig, were ubiquitous. They 'drank fair,' and only attended to their patients when 'so dispoged.' This state of things had grown out of the employment of people from the penitentiary as attendants, nurses, and general helpers about the hospital, and was an heirloom from the primitive times when the hospital itself was only an economical attachment to that institution and the poorhouse. Most of them had just served enforced time on the island, had worked without pay, and for the sake of the board and lodging and the dishonest perquisites they obtained." The new training school committee secured a house near the hospital for a home for the nurses, and made every effort to find a competent person for a superintendent of the work. After much deliberation, they at last obtained Helen Bowden of the University College Hospital, London, known in England as Sister Helen. She had an able assistant in Miss Van Rensselaer. There were only four applicants for the position of head nurse, and Sister Helen accepted only three of them. Twenty-nine applied for admission to the school, and of these ten were rejected. The first class was graduated in 1875 with six members.

In 1887 Mr. D. O. Mills presented to the Department of Public Charities and Correction a sum of money to pay for the erection of a training school for male nurses. This was opened the same year and placed under the supervision of the women's training school, a plan that was continued until the graduation of the first male class.

Additions to the hospital made in later years were the new amphitheatre in the dome erected in 1890 with a seating capacity of nearly three hundred; the Crane Operating Room, the gift of Mrs. Mary Crane Mills in memory of her father, Dr. John J. Crane, formerly visiting surgeon to Bellevue; The Sturges Pavilion, the gift of Mr. and Mrs. W. H. Osborn; the Marquand pavilion erected in 1883 by F. and H. Marquand in memory of their brother, Josiah Penfield Marquand; the Townsend pavilion, presented to the hospital by Mrs. Richard H. L. Townsend in 1887; the Annex erected by Miss M. H. Dehon; the chapel of Christ the Consoler, also the gift of Mrs. Townsend, and the Roman Catholic Chapel; and pavilions for alcoholics, for the mentally diseased, for those suffering with erysipelas, and a number of others, all built before 1900.

ALLIED HOSPITALS

In 1902 the New York Legislature created the Department of Bellevue and Allied Hospitals, which was to comprise the Harlem, Fordham and Gouverneur Hospitals. The buildings were erected in the above order. A new Bellevue was commenced in 1906. In November, 1908, a new pavilion for medical cases with four hundred beds was opened, and in 1910 a new morgue, a pathology laboratory and a dormitory for men were completed. Later a number of new administrative buildings, a pavilion for surgical cases, a new amphitheatre and x ray department, and pavilions for diseases of the eye, ear, nose and throat have been opened. There is also a new psychopathic department, and one for the care of alcoholic patients. Of course, the ambulance has been brought up to date with the rest of the hospital equipment, the old horse-drawn ambulance having been superseded, first by gasoline automobiles, and finally by electric ambulances.

No more fitting tribute could be given to the work of Bellevue Hospital, pursued in the face of almost interminable obstacles and difficulties for nearly two hundred years, than to quote the modest conclusion of Dr. Carlisle's excellent and interesting little history. "A notable part of Bellevue's history has not been related," he writes. "An abler pen would have to tell of her achievements in the fields of medicine and surgery. Of the bold surgery of Mott; of the artistic surgery of Wood—periosteal surgery, inseparably connected with the name of Wood, had here its birthplace; of the skill and precision of Flint in medical diagnosis, all the world has heard. And Clark in medicine, Van Buren in surgery, Barker in obstetrics, Hamilton a master in the plastic art—these continue the brilliant record. These are Belle-

vue's laurels, and to every man of Bellevue they will ever be an incentive to great things. They will be his inspiration and their guiding principle his motto —*Natura arte.*"

News Items.

Mt. Vernon Opens Dog Clinic.—Mount Vernon, N. Y., has opened its first clinic for the vaccination of dogs against rabies. It will be conducted on Tuesdays and Fridays from ten to eleven o'clock in the morning and from three to four in the afternoon.

Gift to Maine General Hospital.—The trustees of the Maine General Hospital at Portland have announced a gift of one hundred thousand dollars for enlargement of the institution from Cyrus H. K. Curtis of Philadelphia, the publisher. Mr. Curtis was born in Portland.

Work on Hospital Branch Begun.—Construction has been commenced of the new five hundred thousand dollar branch of St. Luke's Hospital, New York, which is being erected in Byram Woods, Harrison. The plans call for a structure 220 by 130 feet on a tract of land containing about two hundred acres donated to the hospital by Mrs. Hicks Arnold. A gift of one million dollars supplemented that of the land.

Information for Medical Visitors to New York.—The Committee on Medical Education of the New York Academy of Medicine has printed for distribution in this city and in European medical centers a leaflet of main facts of interest about the Academy and the advantages it offers to medical strangers in New York City. The leaflet has been printed also in French and German, and a half page reprint of it appears in the Spanish edition of the *Journal of the American Medical Association.*

Missouri Valley Medical Society Will Dedicate Building.—An interesting feature of the annual meeting of the Medical Society of the Missouri Valley, to be held September 15-17 in Omaha, will be the dedication of the new eighteen story Medical Arts Building. All of the lectures and diagnostic clinics will be held in the auditorium of this building. An elaborate commercial exhibit will be located on the same floor. Among the speakers at the meeting will be Dr. Hilding Berglund, professor of internal medicine at the University of Minnesota; Dr. Irving S. Cutter, dean of Northwestern University College of Medicine; Dr. McKim Marriott, professor of pediatrics of Washington University, St. Louis; Dr. E. C. Rosenow, University of Minnesota, Mayo Foundation; Dr. Gabriel Tucker, bronchoscopic clinic, University Hospital, Philadelphia; Dr. R. L. Haden, professor of experimental madicine at the University of Kansas; Dr. E. H. Skinner of Kansas City; Dr. William Pusey of Chicago; Dr. C. R. Morre of the University of Chicago; and Dr. Jabez N. Jackson, president elect of the American Medical Association, of Kansas City.

Connecticut State Medical Society Meeting.—The program of the Clinical Congress of the Connecticut State Medical Society, to be held in New Haven, September 21-23, are now ready for distribution. Inquiries for information should be addressed to Dr. Creighton Barker, 129 Whitney Avenue, New Haven, Conn. The meetings will be held at Sprague Memorial Hall in College Street, corner of Wall. The opening session of the Congress will be at 10 A.M., daylight saving time, on Tuesday, September 21st. The fee for attendance will be ten dollars, which will include admission to all sessions of the Congress including a Smoker on the second evening. It will include also luncheon on each of the three days, parking space, and garage, and a copy of the printed abstracts of the papers presented. It will not include use of rooms in the dormitory or breakfasts or dinners in the dining hall.

Queensborough Diphtheria Prevention Drive.—The Department of Health of the City of New York has inaugurated in Queensborough a drive against diphtheria. During the months of July and August a special effort is being made to immunize as many of the preschool age children as possible. In eight of the Department of Health stations, on appointed days and hours, the Department of Health physicians will be on duty to administer immunizing treatment to all those applying.

New Dormitory for Blind Workmen.—The New York Guild for Jewish Blind recently dedicated the new dormitory for blind workmen at 46 West One Hundred and Twentieth Street. This will be supplementary to the work already established in the vacation camp for the blind at Rye.

Centenary of Laënnec.—The Academy of Paris has commemorated the centenary of the death of Laënnec by publishing a second edition of his great work, *Le traité d' auscultation.* On August 12th a *fête bretonne* was held at Ploaré, formerly the parish of Laënnec, which included a service in the church at Ploaré, an official procession to the grave, addresses, a banquet presided over by M. Delécluse, president of the committee, and an afternoon visit to the *Manoir Kerlouarnec,* where Laënnec died.

National Board of Medical Examiners Elects Officers. At its annual meeting, the National Board of Medical Examiners elected the following officers: president, Admiral E. R. Stitt, Surgeon General of the U. S. Navy; secretary, Dr. J. S. Rodman; director and treasurer, Dr. Everett S. S. Elwood; new members of the Executive Committee, Dr. A. S. Begg, Dean of the Boston University School of Medicine; Dr. J. B. DeLee, professor of obstetrics at Northwestern University Medical School; Dr. Otto Folin, professor of biochemistry at Harvard University Medical School, and Dr. Louis B. Wilson, director of the Mayo Foundation.

Health Exhibit at the Sesquicentennial.—The Philadelphia health exhibit at the Sesquicentennial Exposition occupies 8,400 square feet of floor space. Medicine, surgery, dentistry, occupation diseases, nursing, hospital care, and pharmacy all have major exhibits. In the pharmacy exhibits are shown two drug stores, a modern, up to date one and an antiquated one. There are many beautiful and instructive charts and posters illustrating all kinds of health problems. A first aid station, with its personnel drawn from the staff of the Philadelphia General Hospital, is in operation. John Eckles of the Health Department of Philadelphia is director of the exhibits.

Annual Meeting of Association of American Medical Colleges.—The thirty seventh annual meeting of the American Association of Medical Colleges will be held, October 25th-27th in Cleveland, Ohio. The Hotel Statler will be headquarters. Among the speakers will be Dr. John A. Wycoff, University and Bellevue Hospital Medical College; Dr. Franklin D. Barker of the University of Nebraska; Dr. Burton D. Meyers of the University of Indiana; Dr. H. G. Weiskotten of Syracuse University; Dr. Martha Tracy of the Woman's Medical College; Dr. Frederick C. Zapffe; Dr. Albert T. Lytle of the University of Buffalo, Dr. J. W. Pryor of the University of Kentucky, and Dr. W. F. R. Phillips, of the Medical College of the State of South Carolina.

Personals.—Dr. Robert Condy, of Dublin, Ireland, has recently been a visitor in the United States. He is investigating health methods under the auspices of the International Health Board.

Dr. William Martin Richards of New York City has been provisionally appointed assistant physician at Sing Sing. Dr. Richards served as a medical officer overseas during the World War and at one time was also a member of the British Army service.

Dr. James C. Walsh, formerly assistant superintendent of the Onondaga County Tuberculosis Sanatorium, has been appointed superintendent of the Jefferson County Tuberculosis Sanatorium.

Dr. A. B. Emmons, 2nd, has resigned his position of director of mercantile health work at the Harvard Medical School and is travelling in Switzerland.

A recent arrival in New York City was Mme. C. F. Pedroso, wife of the Brazilian surgeon. Mme. Pedroso, who acts as her husband's assistant, said that he would soon follow her for a visit to this country. Dr. Pedroso's specialty is cancer.

Clyde L. West, formerly of the U. S. Army Medical Corps, who was one of the yellow fever volunteers with the late Major Walter Reed, has been placed on the roll of the War Department for the remainder of his life at a salary of one hundred dollars a month in lieu of all pensions. The War Department announced that this was "in special recognition of the eminent service he rendered, the suffering he endured, and the permanent disabilities contracted by him in the study of yellow fever in Cuba in 1900."

Book Reviews

RECTAL DISEASE

Rectoscopie; Sigmoidoscopie. By R. Bensaude. Second Edition. 115 Illustrations. Paris: Masson et Cie, 1926. Pp. 178.

This is by far the most exquisite atlas of rectosigmoidoscopy that has ever been offered to the profession. Dr. Bensaude, who was one of the pioneers in rectoscopy, relates in his introduction the difference in the status of this method of examination now as compared with about fifteen years ago. "In 1907, when I was preparing my first article on rectocolonic endoscopy, there were in France but few surgeons or physicians practising rectoscopy; today their number is legion." Considerable enlargement has been made both in point of text and illustrations on the first edition which appeared in 1910. The illustrations, particularly the colored ones, are very well selected and extremely well done. The text is clear and very interesting. The manipulation of the scope and the comments on biopsies are instructive. No one interested in diseases of the rectum or colon can consider his reference library complete unless it contains this book which is indeed a worthy contribution to proctology.

RECTAL DISEASES

Handbook of Diseases of the Rectum. By Louis J. Hirschmann, M.D., F.A.C.S. Fourth Edition. 252 Illustrations. St. Louis: The C. V. Mosby Company, 1926. Pp. 403.

The new fourth edition of this book is, like its predecessor, a well written book, particularly in so far as the general surgeon is concerned since the author seems more concerned with the operative rather than the nonoperative treatment of the various rectal diseases. Rather strange is the fact that but one small paragraph is devoted to the treatment of the most serious rectal disease, cancer of the recum. Considerable study is required to detect evidence of the book having been revised or rewritten to any great extent since the only changes noted consists of the omission of one chapter from the third edition and the addition of a few pages on sacral anesthesia. In this connection the use of all metal syringes has long been obsolete with most surgeons though the author still shows them in the illustrations. Apparently not much review has been made of the literature which has appeared during the six years intervening since the last edition since new methods and facts are conspicuous by their absence. The injection treatment of hemorrhoids is very briefly touched upon while the operative treatment is given in detail. This does not seem fair to the reader who reads that the author has used this method successfully "for many years in personal practice." Mosby Company have, as usual, put out a very well printed and bound book.

HAIR

Your Hair and Your Health. By Oscar L. Levin. New York: Greenberg Publisher, Inc., 1926.

The entire subject of the care of the hair and its numerous diseases and malformations is well covered in a space of one hundred and sixty-three pages. There are fourteen chapters which include the anatomy and physiology of the hair, general hygiene, baldness from constitutional causes and local infection, premature and senile baldness, canities and abnormal types of hair. One chapter is devoted to occupational affections of the hair. The last chapter contains an excellent summary of the book in the form of questions and answers.

The author lays great stress upon the relationship of hair growth to the general health. While some may think that his ideas in this respect are carried a little too far, they will admit that the advice relating to general health is useful and sound. From the physician's standpoint there are a few statements which can be challenged. In discussing baldness in spots (alopecia areata) he speaks of the use of antiseptics to destroy infection, when there is a pretty general agreement that the disease is not due to any local infection.

The book is a readable one, the author's command of the English language being unusually good. It should appeal to the intelligent layman. The work of the publisher is very satisfactory.

INFECTION

Acute Infectious Diseases. By J. D. Rolleston, M.D. (Oxon.) Physicians and Surgeons Book Co., 353 West 59th St., New York City.

A book of this sort is a pleasure to read. It is the product of vast experience and is excellently written. The large reference list of articles compiled from many lands commends itself for induction of cosmopolitan thought. For diphtheria alone over eighty-five authors have been quoted. This international scope of delineations is invaluable.

An asset to the book is the lack of illustrations for, as Dr. Rolleston maintains rightly, the bedside is the place to study the morbid conditions. A copy could well be in the reference library of every isolation hospital and on the shelves of physicians who come in contact with infectious diseases. It is a true reference book; consequently it is best in the hands of the professor or instructor rather than in the hands of students as a text. In this country first hand knowledge with the notes of clinicians suffice for the majority of students whose medical course is of four years' duration.

Infections usually treated at home or in general hospitals, such as influenza, puerperal fever, acute poliomyelitis and epidemic encephalitis are not included.

Each elucidation of a disease begins with the synonym in French, German, Dutch and Italian. Then follow in order the definition, historical note, etiology, bacteriology, morbid anatomy, symptomatology, complications, tests, diagnosis, differential diagnosis, prognosis, prophylaxis and finally treatment.

The section on typhoid is most complete: no detail is overlooked. There is comment on the rupture of the rectus abdominis being overlooked for intestinal perforation. The fairly rare cases where coli infection may cause typhoid like symptoms are mentioned. In fact the book is thoroughly up to date.

Difference of opinion on some issues is inevitable. For example, on page 48, spraying the throat with

staphylococcus to change the flora in the throat is to some not advisable. There are two pages devoted to the "Fourth Disease." While it is true that we often come across puzzling conditions that are neither scarlet fever nor measles apparently, and some cases like these clear up after a dose of castor oil, the Fourth Disease is not generally recognized by name. In other words Filatow-Dukes or the Fourth Disease exhibits none of the criteria by which diseases are named. There is no constant symptomatology, no definite syndrome, no one constant marking such as Koplik's spots that would give these strange, irregular conditions a right to the title of disease.

Altogether, the book is presented in an interesting manner, has enviable diction, and airs varying schools of thought. It is a very careful work and shows where ideas are in the experimental stage, leaving open to opinion the choice of procedure.

OBSTETRICS

A Handbook for Senior Nurses and Midwives. By J. K. Watson, M.D. 554 Pages with Illustrations. Oxford University Press, 1926.

The author states "his object has been to make this volume largely supplementary to his handbook for nurses and his handbook for midwifery . . . and to go more into detail than would be possible or desirable in the elementary book." This preface at the start disarms criticism. The book is too detailed and exhaustive for the teaching of undergraduate nurses but for postgraduate or supplementary work it undoubtedly fills a much limited field of instruction. Perhaps the usefulness of this book is greater in England than this country where a feeling is against instructing a nurse in the same manner as a medical student.

However, the book is well written, splendidly illustrated, and concisely and clearly covers the subjects considered. This naturally would be expected of the author who has always had a natural aptitude for clear thinking and concise and lucid exposition of his subject.

* * *

Modern Views on the Toxemias of Pregnancy. By O. L. V. de Wesselow and J. M. Wyatt. 99 pages. New York. Paul B. Hoeber, Inc., 1923.

This is a small volume which intends to consolidate the most modern ideas on the toxemias of pregnancy. It contains in concise form the most prevalent theories as to the etiology of these conditions.

The larger part of the book is devoted to the body chemistry during pregnancy and the deviations from normal in the toxemias, with a description of the various laboratory tests to determine these deviations from normal. This portion of the book is handled in a much more lucid and satisfactory manner than that given over to the treatment of these conditions.

TRANSACTIONS

Transactions of the American Climatological and Clinical Association. For the Year 1925. Volume XLI. Printed for the Association, 1925. Pp. xxxvi-216.

Among the more than twenty articles contributed by just as many authors on most varied subjects, those of greatest interest are the following: Differential Diagnosis Between Hyperthyroidism and Psychoneuroses, by Edward A. Strecker; Iodine in the Treatment of Disease of the Thyroid Gland, by David Marine; Röntgen Ray Treatment of Whooping Cough, by Henry I. Bowditch and Lawrence Smith; Extrapleural Thoracoplasty for Pulmonary Tuberculosis, by Howard Lilienthal; The Diagnostic and Prognostic Significance of Pleurisy in Pulmonary Tuberculosis, by F. H. Heise and Lawrason Brown; Increased Permeability of Vessel Walls as Frequent Cause of Pulmonary Tuberculosis, by F. M. Pottenger; The Recognition and Treatment of Neurocirculatory Asthenia in Civil Life, by George Morris Piersol; Tonsillar Infection as a Cause of Meniere's Disease, by Judson Daland; and The Present Status of Chlorine Gas Therapy, by Edward B. Vedder.

MEDICAL RESEARCH

Studies from the Rockefeller Institute for Medical Research. Reprints, Volume LVI. New York: The Rockefeller Institute for Medical Research. Pp. vi-630.

This publication contains the results of the investigations conducted at the Rockefeller Institute, or elsewhere under its grants. They are reprints of articles published in several scientific journals. The subjects covered are pathology and bacteriology, biophysics, chemistry, general physiology, studies of cases in the Hospital of the Rockefeller Institute, and animal pathology. The majority of these articles deal with subjects of an extremely scientific nature, so much so that they are of little practical utility to the general practitioner.

Those of more general interest are Yellow Fever Research, 1918-1924: A Summary, by Noguchi; Studies on Urobilin Physiology and Pathology, by Elman and McMaster; The Biliary Aspects of Liver Disease, by Rous; The Use of Urea as a Diuretic in Advanced Heart Failure, by Crawford and McIntosh; Rheumatic Fever, by Swift; and The Problem of the Etiology of Herpes Zoster, by Cole and Kuttner.

MEDICAL ANNUAL

The International Medical Annual. A Year Book of Treatment and Practitioner's Index. Forty-fourth Year 1926. New York: William Wood and Company. Pp. xii-555.

This annual publication needs no introduction to the English speaking medical world. As usual, its list of contributors includes many shining lights of the medical profession, mostly from England. The medical and surgical literature of America, England, France, and Germany is reviewed. Attention is devoted largely to the treatment of the individual case, with attention to the new methods of early diagnosis, and the prevention of disease. The illustrations are excellent and numerous.

The advances in medical treatment discussed include the persistent use of ethyl esters of chaulmoogra oil in leprosy, the serum treatment of yellow fever and a prophylactic vaccine, rutonal in epilepsy, tryparsamide in syphilis, mercurochrome intravenously in erysipelas and ulcerative endocarditis, adrenalin in heart block, sanocrysin in tuberculosis, and arsphenamin in pulmonary spirochetoses. The insulin treatment of diabetes still requires the aid of dietetic treatment.

Hemorrhage of the newborn responds admirably

to injections of whole blood. Faith is being lost in the value of blood transfusion in pernicious anemia.

Cerebrospinal fever responds well to suboccipital puncture. Lethargic encephalitis is still obstreperous to treatment, but the treatment of acute anterior poliomyelitis has become more effective, especially with the use of physiotherapeutic methods. The value of open air treatment in tuberculosis and, especially in cardiac rheumatism of children, is emphasized. Muscular relaxation is recommended for insomnia and "weaning" methods for chronic alcoholism.

In angina pectoris, surgery is a mistake; in thyroid disease it is proving its usefulness. There is a new method of collecting blood shed during an operation for reintroduction by transfusion. The new operative treatment of mitral stenosis is discussed. The modern treatment of fracture of the neck of the femur and the operation for pruritus ani are reviewed.

The importance of the nondescent of the diaphragm in the production of postoperative pneumonia is emphasized. The use of an indwelling duodenal tube in ileus is advocated. The differential diagnosis of genuine chronic appendicitis is discussed thoroughly.

The new methods in neurologic surgery are reviewed, and old ones reexamined. Ureteral stricture is recognized as a definite pathologic condition. Intravenous urotropin is recommended for postoperative urinary retention. Painful feet and their treatment receive attention. Ophthalmology also comes in for its share of discussion, as does also the treatment of venereal diseases. The various anesthetics are discussed quite fully. Obstetrics and gynecology does not offer much that is new or startling. The outstanding event of the year, the work of Gye and Barnard on the etiology of cancer, is discussed.

As regards the newer methods of diagnosis, the relationship of angina pectoris and coronary thrombosis is taken up. Five cardinal indications for the diagnosis of pulmonary abscess are described. Other innovations are celioscopy, the use of lipiodol for the x ray diagnosis of spinal cord tumors, and cholecystography for the x ray demonstration of the gallbladder.

On the whole, a book of great value to the general practitioner and specialist.

LABORATORY METHODS

Manual of Clinical Laboratory Methods. By Clyde Lottridge Cummer, Ph.B., M.D. 2nd edition, revised. Lea & Febiger, Philadelphia and New York.

The aim of this book by the associate professor of clinical pathology at the Western Reserve School of Medicine, Cleveland, is to have it a textbook for medical students. It may also well serve as a guide for physicians and laboratory technicians with its concise, readily available and intelligible directions for useful diagnostic methods.

As a rule several ways of performing tests, that are in use in different parts of the country, are given, rather than one alone. For the Wassermann tests Kolmer's method is presented which, however, is not thought superior to standardized methods in use in other laboratories such as those of the Health Departments of New York city and State. Many other statements reflect a personal opinion. For example, some people put amboceptor into sheep blood cells all at once instead of gradually as stated here. Again, saline is employed for antigen washings rather than distilled water. The method of cleaning Berkefeld filters is not especially helpful.

No mention is made of Dr. Park's toxinantitoxin for diphtheria, nor of Ramon's "anatoxin" tests.

The section on blood chemistry is clearly written and in an attractive, easily assimilated form. The résumés at the end of each test are good for teaching purposes and for the average technician who is generally unable to wade through a mass of statements and calculations, and depends for learning on actual performance of work as shown him by another technician.

The differentiation between parasites is tabulated. There are abundant illustrations of apparatus and material under discussion, such as microscopic sediment and parasites. The diagram of the method for spinal puncture is well drawn as are other illustrations.

A table giving the direct conversion of c. c. of thiosulphate required in the blood chemistry test, to sugar percentage, simplifies the determination of sugar in the blood.

It is a distinct aid to mention the companies that made the chemicals and apparatus delineated in the book as was done. Weights and measures tables are put in the appendix.

It is a moot question, that of having technicians use books with diagnoses, as there is a great tendency to match results and not turn in to the physician the original findings. It is a valuable book in the hands of a conscientious laboratory worker.

PHYSICAL SIGNS

A Manual of Normal Physical Signs. By Wyndham B. Blanton, M.A., M.D., Associate in Medicine, Medical College of Virginia. The C. V. Mosby Co., St. Louis Mo.

Every medical school has its own method of crossing the gap between the preclinical and full clinical instruction. This book is just such an example.

There are no illustrations by which a student can visualize quickly the detailed information. Most clinicians would take a book like this and use it for outline work putting over the subject to the students by practical application, and then embed the information in practical quizzes.

The index gives a full description of the contents and the headings are as follows: Regional anatomy, sound, inspection, palpitation, percussion, auscultation, constitutional signs, head and breast, respiratory system, heart, bloodvessels, blood pressure, sphygmography and electrocardiography, esophagus and abdomen, back, extremities, lymphatic system, nervous system, rectal and vaginal examination, youth and old age, and order of physical examination. Each of these headings has a list of subheadings which indicate the full scope of the work.

The author feels, as he states in the preface, that in textbooks "normal signs are so intermingled with pathological signs that the average beginner in this subject finds himself hopelessly at sea in attempting to discover a clear description of just the normal." He adds that class room instruction is relied upon to amplify the skeletal arrangement. With the mass of work on hand in medicine it is better to let each clinician provide his own emphasis.

Medicoliterary Notes.

Dr. Ellice McDonald of Philadelphia had an interesting letter in the *New York Times* for Sunday, June 13, on the problem of the family physician. He advocates better education of him and his colleague, the specialist, in the processes of life. "When the profession of medicine recognizes this salient fact," he concludes, and applies the atomic theory to cell processes, then the problem of the family physician and the specialist will solve itself in the fuller knowledge of life and its deviations in disease."

* * *

The National Tuberculosis Association has recently issued the sixth edition of its pamphlet on Standards for the Diagnosis, Classification and Disposition of Cases of Pulmonary and Glandular Tuberculosis. The text has been rewritten and revised so that the edition is practically new. The pamphlet may be secured free of charge by any physician on request to his state tuberculosis or public health association.

* * *

A fund has been authorized by the Italian Cabinet to be devoted to the encouragement of authors, and will be a part of the budget of the Department of National Economy. Prizes will be given to writers and institutions producing works considered to be of value to the country's culture or industry.

* * *

Another use for ultra violet rays has been found at the London Zoo, says the *Daily Mail.* Because his surgical boots are not curing his rickety legs quickly enough, the young pigmy elephant is undergoing treatment. For five minutes daily he is drenched with ultra violet rays from a powerful mercury vapor lamp. His further treatment includes daily massage with cocoanut oil, and a diet of oranges, grapes and bananas, biscuits, and two buckets of condensed milk.

* * *

At the recent conference of German physicians at Eisenach, a resolution was adopted against all forms of prohibition laws, based on the view point that legal restrictions on personal freedom inevitably lead to race demoralization. The meeting was attended also by many prominent temperance advocates. The conference almost unanimously voted in favor of an educational campaign against intemperance by school propaganda, the encouragement of sports, and the curbing of the "treating" habit.

* * *

Advice to the Expectant Mother on the Care of Her Health, is the title of a practical little pamphlet written by Dr. F. J. Browne, professor of obstetric medicine in the University of London and director of the obstetrical unit at University College, London. The pamphlet discusses the benefits of antenatal care, normal pregnancy, the hygiene of pregnancy, its common disorders and their treatment, preparations for confinement, and hints on breast feeding. E. S. Livingstone of Edinburgh is the publisher.

* * *

This season's advertisements for tourists, issued by the American Express Company, contain leaflets calling attention to ways of relieving animal suffering, especially in countries where horses and other beasts of burden are cruelly overworked and maltreated. Among the suggestions made by the express company are: Refuse to hire a cab whose horse shows signs of the lash, abuse or neglect; stop the cab and refuse to ride with a man who beats his horse.

* * *

Elements of Metabolism; Metabolism Testing, What Is Normal? Conspectus of Metabolism Queries, Tables for Computations is the title of a pamphlet by Frank B. Sanborn, formerly professor in Tufts College, and published by Sanborn Company of Cambridge, Massachusetts.

* * *

The Board of Managers of the Manhattan State Hospital have recently issued their twenty-first annual report covering the year ending June 30, 1925.

* * *

According to press reports, the first commercial air ambulance has been completed for use by the German air service at the Dornier-Wal plant at Friedrichshaven. It is a seven passenger, high speed plane, the interior of which is enameled to facilitate disinfection. It contains two berths for the seriously wounded, four invalid chairs, and space for two attendants.

* * *

At a recent meeting of the British Medical Association, the question was humorously discussed as to why almost all British physicians wear moustaches. A count was taken at the meeting and it was found that only about twenty of 250 delegates were shaven on the upper lip. One delegate remarked that, judging from the large number of moustached doctors, the General Medical Council might in the near future be expected to decree that all physicians must wear moustaches.

* * *

According to an article in a recent issue of *Chemistry and Industry,* fuel gas has been successfully produced from sewage sludge in Essen, Germany. The process is controlled by bacterial action and regulation of temperature. A number of plants in Essen are producing gas by this method, ranging from 250,000 to 600,000 metres a year. The gas is used as a constituent of town gas, as a fuel gas at the works, or is compressed into cylinders.

* * *

All truck and delivery horses in Berlin, Germany, which are owned by the city, are having a three weeks' vacation this summer on a three hundred acre municipal estate containing a horse sanitarium in charge of a corps of veterinarians. Officials in charge of the estate, formerly the seat of a nobleman, says that it pays to give horses a rest by the same token that it pays to give human beings a vacation. The animals get all the oats and hay they can eat, and prance about the meadows or loll in the shade under the trees. Many private business concerns are adopting the idea, sending their horses to the same farm while the drivers are on their vacations.—*N. Y. Times.*

* * *

Two articles of interest in the *Nation's Health* for July are entitled Children's Health Camp Requires Careful Organization, by Dr. R. G. Leland; and Camp Sanitation Is an Important Public Health Problem, by Charles G. Cox, of the Division of Sanitation of the New York State Department of Health.

* * *

Strange as it may sound, Americans are the greatest water drinkers in the world. The Londoners drink more water than the residents of any other of the larger, yet the average daily consumption of water per capita in London, according to recently compiled statistics, is only about thirty-six gallons. New York City drinks more than 125 gallons a day, and Chicago about 200 gallons per capita.

* * *

The Loomis Sanitorium for the treatment of tuberculosis, located at Liberty in Sullivan County, N. Y., has recently issued its twenty-ninth annual report.

* * *

The Peruvian Congress recently passed a law making it obligatory that all school buildings in Peru shall install shower baths.

* * *

The Rockefeller Institute for Medical Research has recently issued an attractive booklet describing its organization and equipment, and briefly outlining its history and progress from its founding in 1901 to the present day.

* * *

A student at the University of Chicago recently submitted as a thesis for the degree of Doctor of Philosophy a book on the subject of the frankfurter. The writer, during his studies of meat spoilage, became so deeply interested in the career of the "hot dog" that he ended by devoting all his time and a whole book to the subject.

* * *

The Committee on Medical Education of the New York Academy of Medicine has published a valuable little book entitled *Opportunities for Clinical Study in the Hospitals of New York City with Transportation Guide.* It contains transit maps of Manhattan and Brooklyn, lists of hospitals, clinics, undergraduate medical schools, graduate medical courses, special internships or residences, fellowships, and dental internships offered in New York hospitals, and other information of value. The entries in the above mentioned lists are annotated with descriptive notes.

Abstracts from Current Literature

CARDIOLOGY

Alpha Lobelin.—H. Reichle and K. Peters (*American Journal of Surgery,* Vol. XXXIX, No. 10) conclude, from their personal experience with the drug, that in Alpha Lobelin we have a specific, powerful and reliable stimulation of the respiratory center. To date no evil results have been noted from the drug, although overdosage must be guarded against. In general Alpha Lobelin gives a very quick response—within one to one and a half minutes of injection. Cumulative action is impossible as the drug is rapidly destroyed in the body; within three quarters of an hour at the most, so it seems to be possible in all cases to repeat the dose.

Blood Transfusion.—G. G. Ward (*American Journal of Surgery,* Vol. XXXIX, No. 10) desires to emphasize the following:

1. That blood transfusion should be employed as a *routine* prophylactic measure before operation much more frequently than is the present practice, especially in gynecological cases.

2. That every interne on graduation from the hospital should be competent to make the necessary blood typing and blood matching technic, and to perform a blood transfusion, preferably by the direct method. The blood examination is often necessary at night or on holidays when the laboratory force is not available. This implies instruction and the skill which comes with practice.

3. That five hundred c. c. of blood is sufficient in a large proportion of cases for a prophylactic transfusion, and thus this amount is not sufficient to cause the donor distress.

4. That the amount of blood lost in many gynecological operations is not always appreciated by the operator and is a factor that should be considered where patients have a lowered blood state.

5. That while post transfusion reactions occur in about twenty-five per cent. of cases they are usually not of a serious type provided that the donor's and recipient's blood have been directly matched, and that they do not appear to mitigate the benefits of the transfusion.

6. That if this procedure is more generally adopted, it will result in an appreciable improvement in our mortality and morbidity statistics.

Treatment of Varicosities with Intravenous Sclerosing Injections.—R. Jung (*Schweizerische medizinische Wochenschrift,* November 26, 1925) states that the dread of thromboses and embolisms has been the reason for the objection to the treatment of varicosities by the phlebosclerosing method of injection. In the usual descriptions of this method the remark is often made that there results an intravenous thrombosis. This immediately suggests the thought of thrombophlebitis and fatal embolism. However, it is now definitely known that the phlebosclerosis, as it occurs after the injection of a chemically irritating solution into the varicosities has nothing in common with a true thrombophlebitis, in which the organization of the thrombi is complicated by infectious noxa and embolism is always to be feared. The phlebosclerosis is a productive, adhesive and organizing phlebitis.

As the result of the primary injury of the endothelium there develops a general cellular proliferation in the vein wall, in which not only the endothelial cells, but also the muscle fibers are involved. The vein wall thickens gradually and finally leads to obliteration of the lumen of the vein. The incidental thrombus formations are always of a secondary nature, cling from the very beginning to the diffusely injured vein walls, are held firmly and pierced by the proliferating intima and are eventually changed into a fibrous strand; a migration of such thrombi is not even thinkable. If one also bears in mind that as a result of purely mechanical factors, such as tortuosity and branching of the sapheneous vein and its retarded and often retrograde circulation of blood, a displacement of thrombi is hardly possible, it will be found to bear out the fact of experience, that even with a true infectious thrombophlebitis with palpably demonstrable thrombi of the superficial veins there is no great danger of embolism, and that, as a matter of fact, only thromboses of the deep veins, which are not at all affected in the treatment of varicosities, need not give cause for alarm.

The author has found two good phlebosclerosing remedies in sodium salicylate and sodium chloride. Strengths of fifteen to forty per cent. solutions are injected in amounts of three to five c.c. per injection. The concentration is gauged by the sensitiveness of the patient and the manner of local reaction. Occasionally severe reactions of periphlebitis are observed, even when one is under the impression that he has given a truly intravenous injection. If the first trial injection is borne well without an excessive local reaction, a stronger solution and multiple injections can be given without danger, and one may even treat both legs at the same time, which procedure considerably shortens the duration of treatment. It is best to give one or two injections and then to wait sufficiently long for the inflammatory reaction to subside, which usually takes four to five days. The duration of treatment varies with the individual case from three to four treatments for the less severe cases to ten to fifteen treatments in more extensive cases. From the point of time, this treatment does not compare favorably with surgical treatment, but it has the advantages of not confining the patient and absolute harmlessness.

It is dangerous to inject an inflamed vein or one that had a spontaneous inflammation, as in that case there may be severe reactions and instead of the desired aseptic phlebitis a septic phlebitis may cause all the dangers of general sepsis and embolism.

Blood Pressure.—R. S. Adams (*American Journal of Surgery,* Vol. XL, No. 1) asserts that the keeping of routine bloodpressure records in major surgery will convince anyone of the following facts:

1. Contrary to the general belief, surgery from the start, tends to lower the bloodpressure, and this depression in the average handicapped patient coming for operation, begins from five to twenty minutes prior to any other symptom indicative of the approaching shocked state. The use of several large abdominal packs, unless they are packed with great care, will cause a temporary drop in the systolic and diastolic pressure; and, if the packs are cold, the degree of drop is greater. Rough handling of the tissues and the intestines always markedly reduces the pressures and increases the pulse rate. Loss of blood, unless the quantity is very small, always lowers the pressures and afterwards increases the pulse rate.

2. All three general anesthetics now in use, ether, nitrous oxidoxygen, and ethyleneoxygen, cause a rise of bloodpressure, during the first fifteen minutes, the greatest rise occurring with nitrous oxid, the next with ethylene, and least with ether. But greater depression is seen with ether than obtains with the other two, and a deep ether anesthetic continued for over one hour in any patient, except the young adult of good cardiac compensation, nearly always causes a distinct drop in both systolic and diastolic pressures and a well recognized increase in the pulse rate.

It is true that ether is a cardiac stimulant, but this is not the case when the amount is used that is necessary to produce complete and absolute relaxation. Ethylene seems to produce more gradual changes in the pulse, respiration, systolic and diastolic pressure than nitrous oxid and is not as depressive as ether.

Spinal anesthesia nearly always produces such an extreme drop in bloodpressure that it is contraindicated in low pressure cases, and novocain, in some patients (particularly those of the nervous type) produces a distinct drop in pressure, and is not devoid of harm when used in large amounts as a local anesthetic.

3. Such extremely valuable information may be obtained by routine charting of the pulse, respiration and the systolic and diastolic pressures, that it is to be hoped that the procedure may be given a fair trial. If this is done, it will be agreed that this step, taken in conjunction with careful inspection of the patient as regards capillary circulation, depth of anesthesia, color, etc., will enable the patient to pass through the anesthetic and operation with the knowledge that everything possible has been done to safeguard this most perilous journey.

Successful Case of Embolectomy.—Geoffrey Jefferson (*British Medical Journal*, November 28, 1925) in reporting a case of successful embolectomy at the junction of the axillary and brachial arteries, describes the following technic:

No special instruments are required. Novocain infiltration is the anesthetic of choice. The incision of the vessel wall, removal of the clot, and suture of the outer coats follow the usual technic of blood-vessel surgery. Liquid paraffin or sodium citrate (one per cent.) may be used to prevent premature clotting in the wound. The only important advance in technic over earlier methods may be that in cases of embolism at the aortic bifurcation a distal approach is better than a direct. In these exposure of both femorals, which are then lightly clamped and opened, is followed by retrograde catheterization, the clot broken up, and removed through the openings in both vessels. This method is likely to give better results than a transperitoneal operation in a patient who is probably a bad surgical risk, owing to the presence of the heart disease which has furnished the material for the arterial blockage.

This method is not only one of absolute precision, but the condition of the patient may make it advisable, although much blood may be lost during the probing. Several cases are reported in which the thrombus has slipped away when the artery was exposed. A fresh incision should then be made lower down (for example, over the popliteal vessels). Wounds in arteries are easily sewn up, and one should not hesitate to make multiple incisions if occasion demands it.

Sclerosis of the Pulmonary Artery and Its Branches.—Hymen R. Miller (*Medical Clinics of North America*, November, 1925) points out the difference in the pathological picture between the socalled primary and secondary types of pulmonary atherosclerosis. In the former the lungs' finer radicles suffer, the larger vessels escaping practically intact, while in the secondary type the brunt of the impairment is borne by the medium and larger sized bloodvessels. A survey of the author's necropsy material emphasizes the significant rôle which mitral stenosis bears in the genesis of hypertension of the lesser circulation and eventual vessel sclerosis alteration. Mitral stenosis was found thirty-seven times at necropsy in patients who had no atherosclerosis of the greater or lesser systems. On the other hand, in eighteen cases of pulmonary vessel sclerosis and no general sclerosis, the mitral valve was markedly constricted in fifteen instances; only nine times was it stenosed in patients who had atherosclerosis of the general and lung arterial systems, but out of eighty cases, where there was marked general arteriosclerosis, but no pulmonary sclerosis, the mitral valve was stenosed in one instance only.

Clinically, we are concerned with a slow moving, but ever deepening cyanosis until the skin assumes almost a plum color. This intense, impressive cyanosis is strikingly disproportionate to a mild or even absent dyspnea. A high grade of polycythemia is not unlikely, but its nature differs in some important respects from true or absolute polycythemia. Pain is by no means constant. Its appearance may be paroxysmal, its character is ill defined, vaguely described as "deep within the lungs," but quite unmistakably unlike the typical angina anguish of coronary seizures. Hemoptysis also may be recurrent or entirely absent. In fact, an antecedent history of exacerbations and remissions of chest pain, lung bleeding, aggravated by cyanosis, asthma, etc., is not uncommon. Clubbing of the fingers and toes is unusual, indeed, some authors claim it does not occur. There is no body wasting, no cachexia, and no leukocytosis. The course of the condition is likely to be afebrile. When cardiac compensation breaks, edema, etc., may appear. The x ray and fluoroscopic examinations yield helpful data, *i. e.*, enlarged right heart, relatively small left heart, or enlargement of the conus, absence of pulmonary stasis, as found in cases of mitral stenosis. In general, the syndrome is fairly well defined, and its presence should suggest the possibility of sclerotic involvement of the lungs' bloodvessels; in the absence of heart or lung disorders this clinical picture may represent a socalled primary pulmonary vessel sclerosis.

The diagnosis of either form of lung vessel sclerosis, however, may be hazardous and difficult to separate, as indicated in the number of conditions that simulate it. The author is not prepared to say whether clinically one may distinguish clearly between primary and secondary sclerosis.

Finally, the bearing of infections upon the entire problem of pulmonary bloodvessel involvement has a particular interest for the clinician. Here belongs the consideration of such specific infections as syphilis, gonorrhea, variola, or the possible relationship of sclerosis of the pulmonary artery and its branches to clinical entities like Ayerza's disease, Raynaud's disease, or thromboangiitis obliterans (Puerger).

GENITOURINARY

The Preformed Sac and Oblique Inguinal Hernia.—W. Hughson (*Surgery, Gynecology and Obstetrics*, Vol. XLI, No. 5) reports that

1. In a series of cases in which the inguinal canal was opened on account of a relaxed ring and in which no clinical evidence of hernia was seen, in every instance a small persistent sac has been found.
2. Analysis of a group of cases shows that sixteen per cent. of individuals presenting hernia on one side eventually develop hernia on the opposite side.
3. It is felt that correlation of these facts lends further strong support to the preformed sac theory in regard to the etiology of all inguinal hernias.
4. A study of one hundred consecutive cases of both single and double herniotomies has shown that the double operation increases the incidence of postoperative pulmonary infections, but it does not increase the incidence of wound infection.
5. If any operative measures are used to repair the relaxed ring, a complete herniotomy should be performed.

Retroperitoneal Cysts.—H. W. Cave (*Surgery, Gynecology and Obstetrics*, Vol. XLI, No. 5) suggests that these cases are rare and each one should be reported, special attention being paid to the origin.

1. These cysts are rare and each case should be reported, special attention being paid to the origin.
2. Detailed macroscopic and microscopic descriptions of the pedicles or of the tissue in close proximity to its origin should be noted, as well as chemical and microscopical study of the contents.
3. The most interesting of these cysts originate in vestigial remains of the developing urogenital tract or in the lymphatic systems. Those lined with epithelium come from the former and those without a lining membrane, from the latter.
4. The diagnosis is difficult and symptomatology of but scant help.
5. Treatment is simple: enucleation in one or two stages, according to size of tumor and condition of patient, or marsupialization.
6. Prognosis is good. There is seldom a recurrence.

Urology in Europe Today.—C. P. Mathé (*International Journal of Medicine and Surgery*, Vol. XXXVIII, No. 11) records the varying methods and new developments employed among medical men in Paris, Germany and Austria, along urological lines. The "Constant d'Ambard," Ambard's formula for determining the functional ability of the kidney to excrete urea by comparing the urea in the blood to the urea in the urine, is used and advocated by the school of Prof. F. Legueu of Paris, while by that of Dr. Marion, also of Paris, it is criticized, and catheterization of both kidneys is employed instead, for purposes of examination.

There have been many advances in the treatment of bladder lesions. Professor Joseph has introduced chemotherapy in the treatment of inoperable tumors of the bladder. This consists of direct application of strong trichloacetic acid on the surface of the tumor. This reagent coagulates the tumor, reducing it in size, thereby ameliorating the symptoms. Sometimes he also combines this method with electrocautery of the tumor. Although the cystoscopic picture of malignant tumors of the bladder is usually characterized by central necrosis, he advises the removal of a small piece with rongeur forceps for diagnosis in doubtful cases. At the Necker Hospital, Dr. Flandrin is treating inoperable malignant bladder tumors by intravenous, intramuscular and paravesical injections of mesothorium bromide in conjunction with fulguration and the application of diathermy. In five cases the tumor entirely disappeared and in seven there was a marked diminution in its size, with amelioration of the symptoms.

Because of its resistance to treatment, pyelitis has been subjected to many new forms of therapy. In Professor Legueu's cystoscopic clinic at the Necker Hospital, chronic

pyelitis is treated by local injections of vaccine consisting of milliards of killed bacillus coli, bacilli of Friedlander, staphylococci and enterococci, or of the vaccine filtrate, at weekly intervals. Dr. Papin favors surgical drainage of the renal pelvis in resistant pyelitis cases. Through a small incision which is made through the most accessible portion of the pelvis, he passes a fine curved clamp into the pelvis, larger calyx and finally into a smaller calyx and pushes the renal parenchyma aside from within, emerging at the convex border. He then inserts a No. 20 or No. 23 French Malécot catheter through the renal parenchyma into the most dependent portion of the pelvis in the region of the lower calyx. He leaves this in place for seven to fourteen days, and makes a daily lavage with silver nitrate. Professor von Lichtenberg, at St. Hedwig's Hospital in Berlin, utilizes a similar operation for drainage, with the addition of decapsulation and nephropexy. There is no question that the elimination of stasis due to faulty drainage in persistently infected, ptosed kidneys, by nephropexy, does much to clear up chronic pyelitis. In Austria, in addition to renal lavage, pyelitis is being treated by three intravenous injections of 0.15 gm. of neosalvarsan at two-day intervals. Cylotropin, which contains forty per cent. urotropin, is also used. Three c. c. are injected intravenously every two days for acute pyelitis and cystitis.

Laboratory of Prostatic Hypertrophy.—R. C. Bryan (*International Journal of Medicine and Surgery,* June, 1925) urges the absolute necessity of frequent investigation of the urine and blood, to establish scientifically the ratio of the retained products in the circulation, for their varying percentage change daily, and it is only by an intimate appreciation of them and their significance, that justification for operation may be definitely and honestly determined.

Pathology of Hydronephrosis.—H. P. W. White (*British Journal of Surgery,* Vol. XIII, No. 50) outlines his study in the following manner:

1. Hydronephrosis with the dilatation beginning at the pelvoureteral junction is the commonest form of the disease. It occurs both as a congenital and an acquired condition.

2. Many cases of hydronephrosis have been reported in abnormally developed kidneys, but in what way these predispose to the disease is not known.

3. In a large proportion of the cases identified in fetal and early child life, and which are undoubtedly congenital, the dilatation is bilateral and often involves one ureter or both ureters, while in some fetal examples the lumen is completely obliterated.

4. In the great majority of cases of hydronephrosis the first manifestations of the disease are in adult life, most commonly between the ages of twenty and thirty years. In many of these the kidney is found to be in an extremely early stage of dilatation. It is therefore assumed that such cases represent the acquired form of the disease.

5. The earliest cases show narrowing of the ureter from chronic inflammation, and this appears to be the cause of the dilatation. In all cases there is an associated pyelitis, and some chronic interstitial nephritis.

6. Exacerbations of the existing pyelitis will explain the attacks of pain which come on without apparent cause in most cases of hydronephrosis. There is evidence of the infection either on cystoscopy or in the urine in a large proportion of cases during an attack of pain, which is often accompanied by increased frequency of micturition. There may be little or no evidence of infection after an attack has passed.

7. Chronic, or severe acute, inflammatory disease in any part of the body, chronic gastrointestinal derangement, and the pyelitis of pregnancy are common antecedents of hydronephrosis.

8. There is no conclusive evidence that renal mobility is ever a cause of hydronephrosis.

9. Traumatism is a rare cause, and results from the contraction of scar tissue in the wall of an injured ureter.

10. In drawing conclusions from the specimens I have put forward illustrating a vascular complication of hydronephrosis, I would call attention to the following facts:

a. They represent all the available examples demonstrating a vascular complication of a hydronephrosis, and throughout the whole series there is a complete uniformity in the mechanism producing this complication.

b. In nine of the eleven examples the vessel implicating the ureter is a normal inferior branch of one of the main renal vessels. In some instances it is the venous and not the arterial branch. In none of the specimens is the artery implicating the ureter aberrant in the sense that it enters the kidney through the cortex and not by way of the hilum.

c. It is therefore concluded that the process here described is the usual one which determines a vascular complication of the ureter in certain cases of hydronephrosis. The aberrancy of the vessel concerned is not necessary, in fact occurs infrequently, but offers the most favourable opportunity for compression of the ureter to occur when present.

d. It is obvious, however, that ultimately the ureter may be seriously compressed between the vessel and the distended pelvis in certain cases, and therefore some relief is likely to result from division of the constricting vessel.

Right Duodenal Hernia.—F. R. Brown (*British Journal of Surgery,* Vol. XIII, No. 50) reports a case successfully operated upon, and offers several suggestions as regards treatment.

Obstruction, when present, may be due to: 1, Constriction of the intestine by the orifice, although in most cases this is fortunately so large that strangulation does not occur. 2, Adhesions about the orifice of the sac. Thus Bernardbeig states that in his case the orifice was reduced in size by adhesions, which were broken down during the operation, and which played a very important part in the strangulation. 3, Axial twisting or volvulus of the intestine at the neck of the sac, as reported by several writers (Neumann, Carson, Bernardbeig, and others). The author suggests that obstruction may also occur outside the sac, and affect the bowel proximal to the orifice. The weight of the herniated intestine in its dependent sac will so drag on the root of the mesentery that constriction of the third part of the duodenum by the cord-like superior mesenteric artery is likely to result. This would give rise to the condition of duodenal ileus. In such an event, there would be no sudden increase in size of the tumor, since the efferent loop is not necessarily constricted.

Reduction, by traction on the afferent or efferent loop of intestine, is generally easy, and spontaneously relieves the obstruction, however caused. Should the orifice have to be enlarged, wounding of the superior mesenteric artery must be carefully avoided. The inferior margin only of the orifice may be incised.

If distention of the strangulated gut prevents reduction, the sac should be entered through an avascular space to the right of the superior mesenteric artery, and the bowel withdrawn, opened, and emptied, after which reduction through the orifice should be easily accomplished.

After reduction, closure of the neck of the sac should be attempted, if the condition of the patient permits, in order to prevent the possibility of recurrence. In at least two cases (Paton's and Mueller's), where this procedure was not carried out, it was found at postmortem examination that a considerable quantity of gut had re-entered the sacs.

Subphrenic Abscess.—A. O. Whipple (*American Journal of Surgery,* Vol. XL, No. 1) discusses the etiology, symptomatology, and differential diagnosis of this complication, and says, regarding treatment:

There is a measure which I am firmly convinced is of great value in preventing the development of a subphrenic abscess. This applies to cases of upper abdominal drainage such as is done for cholecystectomy or choledochostomy and consists of turning the patient over on the face two or three times a day after the first week of the operation. This has a very definite effect of emptying or draining the puddle of fluid that has a tendency to collect in the subhepatic space. Another precaution against this spread from a subhepatic collection to a subdiaphragmatic space is to leave drainage in long enough for a tract to be established. Considerable stress is laid by most writers on the subject upon early incision and drainage of the subphrenic abscess. This is undoubtedly wise once the diagnosis of abscess is established; but early needling and too early exploring of the subdiaphragmatic area may do considerable harm and may result in a subphrenic infection where none had existed. Daily x ray and physical examination with notes for comparison will usually determine in three or four days whether an abscess is really present.

As a rule the tenth rib in the midaxillary line is the best approach. Under paravertebral novocain injection going two rib spaces above and below the tenth rib will give much

better anesthesia than the local over the line of incision alone. Either the intercostal incision or removal of a segment of rib will give good exposure and drainage, provided the incision is long enough. The mistake too frequently made is too short an incision, too small a segement of rib removed. The newer, electrically lighted, illuminated retractors are of great help in inspecting the size and site of the abscess. Care in avoiding the pleura by pushing it up by gauze dissection will prevent much trouble.

Two large soft rubber tubes, so arranged that they can be connected to bottle drainage for irrigation purposes afford the best drainage. The wound edges do well with dichloramine—or iodoform—gauze packing. Little or no suturing is necessary. Within one or two days we begin dakinization if the abscess wall is well formed and has no peritoneal communications.

Inguinal Hernia.—R. H. Russell (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 5) states that in saccular hernia removal of the sac will cure the hernia. His operative procedure after exposure of the canal by incision of the external oblique and location of the sac, reads as follows:

1. Seize the sac in a pressure forceps and pull it forcibly out; strip the structures of the cord completely away from the sac and abdominal peritoneum, and this involves working deeply in the abdomen; free the neck of the sac by sweeping the finger all around it.

2. Twist the sac tightly up until practically you can twist no more, pulling forcibly upon it all the time. This will insure that the entire sac will be torsioned up to the point where it comes off from the abdominal peritoneum, and it is at this point that the ligature must be applied.

3. Do not transfix with a needle; apply a "crusher" of some sort to the spot where the ligature is to go; below the crusher throw the ligature (catgut always, never silk) which will slip into the crush as the instrument is taken off.

4. Nothing more will remain to be done, except to repair the incision in the external oblique. Personally I prefer to do this by merely including it in one or two of the stitches employed for closure of the outer wound.

I attach great value to the tight torsioning and forcible pulling on the sac; also to nontransfixion, and the use of catgut always as a ligature.

ANESTHESIA

Ethylene Oxygen.—J. S Lundy (*American Journal of Surgery,* Vol. XXXIX, No. 10) describes, for the benefit of those who are inexperienced in gas anesthesia, the method of administration of ethylene oxygen. This anesthetic is indicated in nearly all types of ordinary minor surgical cases. Its principal indication, however, is the weak, debilitated patient. In operations requiring a cautery or similar apparatus, its use is contraindicated. Neither will it suffice, combined with oxygen, for laparotomy in the presence of acute peritonitis, and it frequently fails in operations on the gallbladder. It does not afford the profound relaxation that can be obtained with ether.

The signs and symptoms of ethylene oxygen anesthesia are outlined in tabulated form, various adjuvants are suggested, and the method of administration, including induction and optimal saturation, and the operative period, is set forth in detail.

Ethylene Anesthesia.—C. L. Hewer (*American Journal of Surgery,* Vol. XXXIX, No. 10) presents the results of one hundred and twenty administrations of ethylene as follows: The operations included abdominal exploration, amputation of the breast, excision of cysts, glands, ganglia and polypi, incision and drainage of abscesses, suture of tendons, circumcision, tonsillectomy, and dental extractions. The total time of anesthesia varied between two and fifty-eight minutes, while the age of the patients was from two to sixty-two years.

The average time for the induction of anesthesia was one minute fifty seconds. No case gave rise to any anxiety during operation. Anesthesia was completely satisfactory in one hundred and ten cases with ethylene or ethylene oxygen only. In five of the remaining patients a little ether had to be added to secure the necessary relaxation. The rest of the unsatisfactory cases were all dental extractions which exceeded the estimated time, a nasal apparatus not being available. If this could have been used there is no reason to suppose that the anesthesia could not have been extended to enable all the extractions to be completed. The "single-dose" method usually gives about one and one-quarter minutes anesthesia, which is longer than with a "straight gas" and rather shorter than with closed ethyl chlorid. The noticeable lack of aftereffects constitutes the chief advantage of ethylene anesthesia.

These results agree substantially with the reports of large numbers of cases anesthetized with ethylene in America, and appear to show that this gas has certain advantages over the other anesthetics at present in use, especially for minor operations taking a moderate time and which requires more than nitrous oxid.

Scopolamine Morphine Seminarcosis.—O. H. Schwarz and O. S. Krebs (*American Journal of Surgery,* Vol. XXXIX, No. 10) reports on the use of seminarcosis in the Barnes Hospital, St. Louis. It is employed in ward service only in the cases in which no abnormality presents itself at the beginning of labor. Thus all cases in which the fetus is known to be dead are excluded, as well as those of moderately contracted pelvis, where prolonged labor and an abnormal mechanism might be expected. To such, nitrous oxide is administered as desired.

Seminarcosis is used chiefly as a first stage measure, but its effect in most instances lasts well into the second stage up to the time when the presenting part becomes visible, when one of the common general anesthetics is employed. Our method and plan of procedure has been fully described in our previous publications, and usually consists of two injections of 1/133 grs. of scopolamin repeated in forty-five minutes, the first injection being combined with 1/6 gr. of morphin. The injections are given subcutaneously. This procedure is very important as it is not desirable to get the scopolamin to act too quickly. Subsequent injections are given, 1/266 gr., at intervals, as indicated by the course of labor and condition of the patient.

In the primiparas the procedure is usually started when there is about two finger breadths dilatation and the patient is definitely complaining of pain. In the multiparas it may be started as soon as active labor begins and the patient complains of pain. It can be used in the multipara with advantage in cases where it is obvious that labor will not terminate within three hours. When a multipara enters the hospital in active labor and it is apparent that her labor is to be terminated comparatively soon, we prefer to use nitrous oxid, and we presume that ethylene would especially be applicable for such cases, although we have had no experience with its use.

We know of no method, which by such a simple procedure as two or three hypodermic injections can result in such complete amnesia over a period of such considerable time, that enables at least eighty to eighty-five per cent. of these cases to go through labor without its recollection. Fetal asphyxia is not increased, although an occasional child is born in a state of oligopnea, from which they usually promptly recover on the slightest stimulation.

The disadvantages of the method are chiefly from the standpoint of the attendants. Someone must be constantly with the patient, particularly the one who is supervising the injections. The other disadvantage is the not infrequent restlessness and occasional excitability of the patient. This is, however, by no means striking. It has no effect on the patient herself but at times is quite taxing to the attendant. If this restlessness and excitability which we occasionally see, can be eliminated, the method could soon be pronounced ideal.

Gas Anesthesia.—A. Goldman and J. D. Goldman (*American Journal of Surgery.* Vol. XL, No. 1) find that acetylene oxygen meets the demands of extraction and oral surgery more fully than other methods of anesthetic. With nitrous oxid acetylene oxygen the oxygen content of the blood is normal throughout the anesthesia. In answer to the question, "What advantages has acetylene plus nitrous oxid plus ethylene with oxygen over acetylene alone with oxygen?" the writers assert that here the principle of synergism is seen clinically to apply.

Anesthesia is produced through the reduction of the oxygen supply sufficient to affect consciousness, pain apperception and pain perception. The oxygen must be in sufficient quantity for the respiratory and cardiac functions to continue. With ethylene the oxygen supply varies from seven

to twelve per cent. With acetylene the oxygen supply of the inspired gasses is never less than thirty per cent. and usually above forty per cent. The more soluble a gas the more reduction of the oxidative processes with an equal percentage of oxygen. Ethylene is more soluble in blood than is nitrous oxid. We may, therefore, expect less reduction of the oxidative processes when seven per cent. oxygen is inspired with ninety-three per cent. nitrous oxid than when seven per cent. oxygen is inspired with ninety-three per cent. ethylene. Acetylene is still more soluble than is ethylene.

SURGERY

Osteitis Fibrosa and Bone Syphilis.—S. E. Wilhelm (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 5) draws the following conclusions from his anatomical and röntgenological study of the subject:

1. There are gross anatomical and clinical resemblances between the hyperostotic form of syphilis of the long bones and osteitis fibrosa, both the senile hyperostotic porotic form and the juvenile endosteal type. Coarser gross morphological similarities, such as deformities, elongation and bowing, and especially, the sabre blade form of tibia, are found in the affected bones of both diseases.

2. Despite these external similarities we are dealing, especially in regard to their histogenesis, with two fundamentally different diseases. The essential differences in their nature express themselves in the individual anatomico pathological characteristics of the affected bones, and also in their röntgen pictures.

3. Characteristic of hyperostotic syphilis are: (a) the marked, often tremendous, participation of the periosteum; (b) the more or less advanced narrowing and obliteration of the marrow cavity; (c) the sclerotic or finely porous quality of the newly built bone tissue. The meshes or pores particularly in the röntgen pictures seem to be directed lengthwise, parallel to the long axis of the diaphysis.

The sabre blade or sabre sheath form of tibia in syphilis may be due purely to a periosteal new formation of bone, i. e., a pseudobowing; or to an osteitic rebuilding and elongation, resulting in a true bowing.

4. Characteristic of the senile hyperostotic-porotic form of osteitis fibrosa, Paget's disease, are: (a) The absence of periosteal participation; (b) the very great widening of the marrow cavity, even into the epiphyses; (c) the frequent lengthwise splitting up of the compacta into lamellas. The sabre blade tibia of Paget's disease is the result of the rebuilding and elongation of the bone, i. e., a true bowing.

5. In the juvenile endosteal hyperostotic-porotic form, there also is a complete absence of periosteal involvement. Only these latter cases may be difficult to distinguish röntgenologically from congenital bone syphilis.

The occurrence of more or less well formed cysts, or of single, circumscribed, dense foci accompanying a diffusely spreading osteitic new bone formation, are diagnostic points in favor of osteitis fibrosa, as against lues. In the remaining still doubtful cases, additional clinical methods should be employed to arrive at a diagnosis.

Osteitis Deformans.—R. L. Knaggs (*British Journal of Surgery,* Vol. XIII, No. 50) approaches this disease from the point of view of its relation to osteitis fibrosa and osteomalacia, and summarizes his argument as follows:

1. Certain diseases of the bones owe their origin to the action of toxins— probably those of metabolic or intestinal origin.

2. Predisposing to their development an idiosyncratic susceptibility on the part of those who suffer from them may be assumed.

3. The ability of the bones to resist toxic influence is a factor of great importance.

4. The relative intensity of that resistance can be roughly gauged by the extent and character of the reaction excited in the soft tissues of the affected bones.

5. If the vitality is good, the resistance opposed to the toxins may ward off harmful effects till the constitutional strength is reduced by age and disease. The reaction under these circumstances is strong, and the resulting affection takes the form of *osteitis deformans.*

6. On the other hand, if vitality is feeble the disease appears earlier—in childhood, adolescence, or early manhood. The reaction is fair, but not so vigorous as in osteitis deformans. The form the disease then assumes is that of *osteitis fibrosa.*

7. Lastly, when owing to the severe depression of the patient's vitality, usually by untoward circumstances, the power to react is absent *osteomalacia* develops.

Apophysitis of the Os Calcis.—P. Lewin (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 5) defines this complication as an inflammation of the caplike epiphysis of the posterior portion of the heel bone. It is a fairly common condition occurring usually in boys between the ages of nine and thirteen years. The probable etiology is concerned with two factors: local external and especially internal trauma and local circulatory disturbances affecting the epiphysis during a critical period in its growth and development. The treatment consists of immobilization and relief from weight bearing plus general hygienic considerations. The prognosis is excellent. The condition is analogous to Legg's disease, Koehler's tarsal scaphoiditis, Scheuermann's vertebral epiphysitis, Freiberg's infraction of the metatarsal head, but especially to Osgood's tibial epiphysitis.

More röntgenological observations must be made on the normal or symptomless heels of children between six and sixteen before accurate statements can be made about pathological heels. It is evident that there are marked "normal" variations.

Developmental Anomalies of the Patella.—J. D. Adams and R. D. Leonard (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 5) point out that the danger in mistaking congenital anomalies for fracture is more common than generally supposed. The differential diagnosis between the two can easily be made however by an x ray film. Congenital deformities are usually bilateral. The adjacent surfaces of the bones are smooth and consist of cortical bone. The congenital anomalies are located in the outer and upper quadrant, which is a rare location for fracture. The absence of a typical clinical history and the symptoms usually associated with fracture should make the examiner suspicious that he is dealing with a congenital anomaly.

The Relation of Chronic Foci of Infection to Kidney Infection.—Russell L. Haden (*American Journal of the Medical Sciences,* March, 1925) says that pyogenic kidney infection is almost always of hematogenous origin. The pathological picture is variable and cannot be determined from the clinical symptoms. The socalled pyelitis in the absence of obstruction is almost always a pyelonephritis. The colon bacillus is probably seldom the primary invader except possibly in cases of lower urinary tract obstruction. The infecting agent is usually a streptococcus or staphylococcus which produces lesions by reason, either of great virulence or an especial affinity for kidney tissue acquired in a chronic focus. In a great majority of cases of chronic pyogenic kidney infection the organism is fed into the blood stream from chronic foci of infection. Six cases are reported in which kidney lesions similar to those from which the patient suffered were produced in animals by the intravenous injection of organisms recovered from infected teeth. The need for the proper consideration of chronic focal infection in treating such cases of kidney infection is apparent.

Postrectal Tumors.—C. J. Drueck (*American Journal of Surgery,* Vol. XXXIX, No. 10) writes of his subject, briefly, as follows:

Treatment of Dermoids: If suspended by a pedicle the attachment should be transfixed as its base and securely tied, and the dermoid cut away. If deeply attached or covered with other tissues they must be enucleated.

Treatment of Teratoma of Embryoma: Through an erroneous diagnosis the patient may be submitted to an exploratory laparotomy, the abdomen being opened by a median incision. The tumor is then found to be retroperitoneal and behind all the pelvic viscera. By this method of approach the operator must work in a deep cavity where the control of hemorrhage is difficult if not impossible. Attack by the peritioneal route is likewise impracticable because the rectum and ureter have been pushed down by the growth. Sacral resection is the only successful way to reach these growths but even this posterior route is too grave an operation to supplement a previous exploration.

The patient is prepared in the right lateroprone position, the hips being well raised and the thighs flexed. A Kraske incision, beginning just posterior to the anus, is carried up in the median line to the upper limit of the coccyx and then follows along the left edge of the sacrum. This incision is carried down to the bone and the wound is widened to the right and left, lifting off the gluteal muscles until the sacrum and sacrosciatic ligament are exposed.

The third sacral nerves are to be identified and the sacrum divided below them. The central canal of the sacrum is not to be opened. The attachment of the sacrosciatic ligament to the coccyx is severed and the lower sacrum is also freed by blunt dissection. The amputation is best done with a Gigli wire saw. The use of chisel and mallet here causes shock.

As the sacrum is lifted off the tumors are often in plain view and after all bleeding has been arrested the growth may be leisurely studied and can usually be removed without disturbing the pelvic viscera or opening the peritoneal cavity.

Bronchoscopic Treatment of Lung Abscess.—M. C. Myerson (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 5) recommends a more earnest trial of bronchoscopy in nonexpectant treatment of suppurative lung disease. This procedure which is done without anesthesia in children, and with a small amount of local anesthetic in adults, is free from injury of any kind to the individual when performed by skilled endoscopists. When properly performed, it is not as formidable as the profession has been led to believe. Today, in the hands of qualified workers, this treatment has no mortality, and should be considered before surgery is undertaken as surgery in most cases is deforming, and is not without danger to life.

Trauma and Malignant Tumors.—J. Ewing (*American Journal of Surgery,* Vol. XL. No. 2) cites the five following conditions as those essential to the acceptance of trauma as the cause of a tumor:

1. The authenticity and sufficient severity of the trauma.
2. Previous integrity of the wounded part.
3. The identity of the injured area with that giving origin to the tumor.
4. The tumor must be of a type that could conceivably result from trauma.
5. There must be a proper time interval between the receipt of the injury and the appearance of the tumor.

This review of the data required to establish the traumatic origin of a malignant, tumor emphasizes the complexity of the problem. It is obvious that such data are very seldom presented, and many of them are difficult to obtain. Some of them are essentially matters of interpretation rather than of definite determination. Nevertheless, without them one cannot assert that a tumor is of traumatic origin. The traumatic theory runs against too many general objection to permit its uncritical acceptance. Moreover the effective exciting factors of most of the common forms of cancer are sufficiently well known to exclude trauma. Hence it is a safe conclusion that trauma rarely produces cancer de novo. More often it brings to light a previously existing cancer or excites a miniature cancer or possibly a pre-cancerous lesion to more rapid growth.

Dermatolysis.—Herman Goodman and Eugene Traub (*Surgery, Gynecology, and Obstetrics,* Vol. XLI, No. 5) state that dermatolysis is regarded as a rare disease. It is variously known as Loosenski; cutis laxa; cutis pendula; Pachydermatocele; and chalazoderma. The partial or circumscribed form of dermatolysis is characterized by areas of hypertrophy and looseness of the skin and subcutaneous tissues. The affected area of skin may hang in loose folds or be sufficiently elastic to allow of stretching. The appearance of the surface of the integument may be normal, hyperpigmented, with dilated and gaping follicles or comedones. The skin is usually thickened, but exceptionally it is thinner than normal. On palpation, one gets a doughy or velvety soft feel of a greasy, uneven surface. The sensation may be unaffected or hypersensitive. There are no subjective symptoms. Although any part of the body may be affected, the locations most frequently involved are the face, especially the eyelids; the neck, the abdomen; and the genital region. The condition is somewhat progressive. After reaching a certain stage of development it may remain stationary.

The etiology is unknown. In certain instances the condition is congenital, in others hereditary (several generations); but usually it as acquired. The starting point may be the site of former trauma, and the vague term of "trophoneurosis" has been applied to the causation.

The diseases which may be confused with dermatolysis include diffuse dermatolysis or cutis hyperelastica. The "elastic skin" or indiarubber man of the circus side show is an excellent example of this form of dermatolysis. Here the integument is generally loosely attached to the subcutaneous tissue, and has the property of great distensibility, occurring normally in the young of certain animals, as kittens. Diffuse dermatolysis has been studied by a number of observers.

Dermatolysis must not be confused with the relaxation of the skin and subcutaneous tissues encountered in senility and after pregnancy. In both of these, hypertrophy of the constituents of the skin is lacking. Nævi and sebaceous cysts are readily distinguished by the absence of the features of true partial or circumscribed dermatolysis. The relaxation and hanging-in folds of the skin are features of pseudoxanthoma elasticum, but associated papules and plaques are absent in dermatolysis.

Postoperative Adhesions.—L. Schönbauer (*Wiener klinische Wochenschrift,* August 21, 1924) maintains that shown that bacteria alone are not sufficient to produce postoperative adhesions. The bands of adhesions are formed only when tryptic ferments reach the peritoneum at the same time. The formation of adhesions may be avoided by preliminary treatment with trypsin. The author intends to make an antitryptic serum, to be used in operations.

Aneurysms of Scarpa's Triangle.—R. W. McNealy and J. L. Spivack (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 6) find this complication comparatively common. Arteriovenous aneurysms outnumber the simple variety, however. Arauma and lues are the important etiological factors.

In most cases provisional ligature of artery and vein followed by permanent quadruple ligation with excision or plication of sac will produce excellent results.

Surgery of Uterus and Adnexa.—E. H. Pool and E. M. Hawks (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 6) print their results of ten years' experience with surgery of the uterus and adnexa, finding that conservative treatment of follicular and corpus luteum cysts is satisfactory. Irrespective of the type of cyst, it is advisable to remove both ovaries when true epithelial papillas are found on one side.

Proved Tuberculosis of the Pleura.—W. S. Lemon (*Surgery, Gynecology and Obstetrics,* Vol. XLI, No. 6) records thirty cases which bring him to conclude that it would seem wise to regard all cases of serous effusion as tuberculous, and to bear in mind that a great deal of harm can be done by hasty or ill considered treatment, and that a large percentage of all cases of empyema, especially if not preceded by pneumonia or sepsis, are also tuberculous.

In planning methods of treatment, great care should be exercised in the preliminary evaluation of the history, in the examination of the aspirated fluid, and in the consideration of implications involved in cases of sterile exudate. Any lack of such care and consideration results in failure to conduct treatment intelligently, and reduces the patient to a condition of chronic invalidism. Should the patient finally recover from the subsequent necessary operative procedures the end result, although satisfactory, is not a triumph but rather a test of his own vitality.

Malignancy of the Breast.—L. Frank (*American Journal of Surgery,* Vol. XXXIX. No. 10) asserts that early diagnosis with extensive radical operation, bearing in mind the avenues of dissemination, offers the best hope of permanent cure.

Postoperative "rheumatism," neuritis, etc., should be viewed as probably due to metastasis until proven to be otherwise.

Removal of a section of the tumor for diagnostic purposes should always be done with a cawtery knife and all breasts removed as carcinomatous should be examined postoperatively to confirm this diagnosis.

Certain types of chronic mastitis may be definitely looked upon as precancerous in character.

The röntgen ray used postoperatively is of definite value

in the prevention of recurrences. Its preoperative use for blocking the lymphatics is of very doubtful value.

Dislocation of Astragalus.—W. L. Sneed (*Journal of Bone and Joint Surgery,* April, 1925) maintains that in all severe dislocations of the astragalus the blood supply of the bone is interrupted, perhaps temporarily destroyed. There is no main nutrient artery to this bone. It is supplied by numerous small blood vessels, which cannot be stretched to the degree necessary for dislocation without rupture. In severe dislocations of the astragalus this bone may be replaced in normal position and a good functioning foot may be hoped for.

PEDIATRICS

Applicability of Various Diagnostic Tuberculin Tests.—After comparing the various diagnostic tuberculin tests, Herman Czickeli and Richard Haller (*Wiener klinische Wochenschrift,* January 29, 1925) recommended the Moro concentrated percutaneous reaction, as modified by Hamburger. Percutaneous reactions are well borne both by children and by their parents. Another advantage of this reaction is the fact that it can still be read even after five to seven days. It is positive in 80 to 90 per cent of cases.

The technic is as follows: The test is made and may be repeated in a week if necessary. If it results negatively, 0.1 mg. of tuberculin is again injected on the second day, and if this is negative, 1.0 mg. is injected subcutaneously on the next day. If all the tests are negative within three days, the presence of tuberculosis is unlikely in ninety nine per cent of the cases. The entire procedure may be repeated after one week if necessary.

Wheal Formation in Infants and Children.—J. D. Pilcher (*American Journal of Diseases of Children,* January, 1926) discusses wheal formation in infants and children in edema, cretinism, scleredema, sclerema, nephritis, cardiac disease, severe prostration and tuberculin positive subjects. In infants with rickets or spasmophilia low serum calcium and phosphorus, down to half the normal quantity, have no influence on the permeability of the minute vessels of the skin, as measured by the codeine wheal reaction.

Cervical Adenitis.—R. Franklin Carter in discussing cervical adenitis (*Archives of Pediatrics,* October, 1925) believes the point should be emphasized that, when the problem is to be treated as one of infection, the nodes, which fulfill the purpose of filtering microorganisms out of the system, are not to be regarded as offending agents and removed indiscriminately: rather, the source of infection often elusive on first investigation is to be sought until located. Attention to the portal of entry frequently obviates the necessity for surgical reatment of the nodes. If, however, simply restoration of function is desired Dr. Carter favors incisions of a quarter inch in length preferably where the neck creases naturally and at the margin of the superficial abscess so that the skin may not attach to the deep fascia and, together with destruction of fat leave an unsightly scar. The article is well illustrated by pictures of types of inflammation and scars, and diagrams in explanation of the text.

Prevention of Orchitis in Mumps by Injection of Convalescent Serum.—V. de Lavergne and P. Florentin (*Bulletin de l'Académie de médecine,* March 31, 1925) tested this procedure in 113 cases. The blood was collected from the fifteenth to the twenty-fith day in uncomplicated mumps cases or upon restoration of the general condition in cases with orchitis. The usual Wassermann test, addition of phenol and heating to 56° C were carried out. The dosage preferred is twenty mils in two injections of fifteen and five mils, respectively, though the earlier cases received only ten or fifteen mils. Among 107 untreated cases, twenty-five were complicated with orchitis and nine with clinical meningeal reactions, whereas among the 113 treated cases only five had orchitis and two meningeal reactions. Furthermore, the last twenty-eight cases treated, all of which received twenty mils of serum, were all free of orchitis. The serum used in mumps should be a mixture of that from several cases and should be given in generous amounts, for the following reasons: Convalescence does not set in, as in measles, at an easily ascertainable time. It is possible for orchitis to appear as late as the twentieth to the forty-fifth day, showing that even at an advance period in convalescence immunity may not yet be sufficient to extinguish the activity of the virus. In one instance blood was collected from a patient on the eighteenth day of convalescence and on the twentieth day he developed orchitis; the serum obtained from the patient was doubtless altogether lasting in preventative value. Again, relapses of mumps may occur, as was noted in two of the authors' patients; in such cases likewise the serum is presumed to be valuless.

The Zed Reaction in Inanition.—John Zahorsky (*Medical Clinics of North America,* July, 1925) proposes the name Zed reaction to a singular group of symptoms which appear in the majority of cases of partial or complete starvation whenever the starved condition is relieved, as is seen most strikingly in cases of pyloric stenosis of young infants a short time after the pyloric stenosis is opened; but the symptoms also occur in other forms of inanition, e.g., after prolonged feeding with cereal decoctions and other foods which are deficient in protein content and caloric value. It is a common manifestation in marasmus (athrepsia). The name Zed is an old name for the letter Z. Here it means nothing, except that it designates a final reaction before recovery.

The Zed reaction is characterized by a slight gain in weight, an elevation of temperature, and the appearance of watery stools, which contain a large number of cells. The reaction may be slight; it may be so severe as to end in death. It is an inflammatory condition of the intestinal mucosa occurring in infants previously starved after proper feeding is instituted. Microscopically, the stools reveal a great discharge of cells—columnar epithelium, lymphocytes, leucocytes, and lymphoid cells. These fill the fluid part of the stool or are embedded in shreds of mucus. Many times clumps of degenerated leucocytes (pus cells) were observed. The stool also reveals undigested curds or flakes suspended in a watery fluid. The color varies from yellow to green. Gradually this consistency increases and a normal stool is found after several days. In severe cases the fluid nature of the stool may persist for two weeks, with frequent relapses after recovery.

The cause of the Zed reaction is a cleansing process following a severe mucosal contamination. The severity of the reaction depends on many factors, the chief of which are the extent of the contamination, the number and the virulence of the bacteria which have penetrated the columnar lining, and the resistance of the infant. Too much undigested food by its own fermentative product will, of course, aggravate the symptoms.

Whenever the Zed reaction appears, do not assume that the infant does not tolerate the food and immediately place it on a starvation diet, but continue to feed the baby a maintenance or an optimum ration with plenty of protein until this intestinal inflammation subsides. Many a baby is starved to death the assumption that it is intolerant to food, when, as a matter of fact, it merely is cleaning up a mucosal contamination. The mucopurulent discharge can be disregarded, as it must go on until the intestines are cleaned. Check the peristalsis by medication (paregoric, bismuth, tannin), but do not starve the baby. It is only by feeding the child and keeping up an increasing blood volume that the intestines can be restored to health.

Surgical Treatment of General Peritonitis.—A. C. Arnet (*International Journal of Medicine and Surgtry,* Vol. XXXVIII, No. 11) outlines his routine method as follows: Local anesthesia or gas oxygen, quick operation with a minimum of trauma and removal of cause, free drainage, morphin regularly until peristalis is reestablished, hot dressings, hypodermoclysis and the absolute avoidance of all cathartics, constitute our routine method in the treatment of these cases.

A split muscle transverse incision is used in preference to the more common varieties as the latter almost always develop incisional hernia following drainage. The split muscle transverse is made transversely at the level of iliac crest, extending from the iliac crest internally to a point slightly beyond the outer margin of the rectus muscle. It is carried down through the skin, fat transversalis fascia, internal oblique muscle and peritoneum. The rectus is not cut, that portion of the incision extending over the rectus being carried in depth through the muscle sheath only. Two of these incisions are made, one on either side.

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GREGORY STRAGNELL, M. D., *Editor*

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Medicolegal Notes.

PHYSICIAN MUST FILE REPORT UNDER NEW YORK WORKMEN'S COMPENSATION ACT

The New York Appellate Division, La Duca v. U. S. Light & Heat Corporation, 212 N. Y. Supp., 240, reversed an award on the ground that the physician who rendered the medical services for which the award was made did not comply with the provisions of section 13 of the Workmen's Compensation Law as to filing a report of the injury and treatment on the form prescribed by law.

PRIVILEGED COMMUNICATIONS—PENNSYLVANIA STATUTE

An assured in his application for life insurance stated that he had never had convulsions, an answer material to the risk. A physician who had attended the assured was asked whether he had treated him for epilepsy or convulsions. The trial court excluded the question on the ground that the witness had indicated to the court that the specific disease from which assured was suffering was a loathsome one of which epilepsy and convulsions were only symptoms, basing the ruling on the statute as to privileged communications which would tend to blacken the patient's character. Pa. Stat. 1920, Sec. 21860. The Pennsylvania Supreme Court holds, Skruch v. Metropolitan Life Ins. Co., 284 Pa., 299, 131 Atl. 186, that if the defendant, having received an affirmative answer to the question propounded, had then attempted to follow it up by an inquiry which if answered would have shown that the convulsions and epilepsy were symptoms of a loathsome disease the act would have applied, and an objection to the later inquiry would have been properly sustained; but no such question was asked.

PROCEDURE UNDER NEW JERSEY ACT FOR PENALTY FOR PRACTICING WITHOUT LICENSE

The New Jersey Supreme Court holds, State Board of Medical Examiners v. Buettel, 131 Atl. 89, that the Act May 22, 1894 (P. L., page 454), as amended by Act April 6, 1921 (P. L., p. 702), authorizing an action by the state board of medical examiners to recover a penalty for practicing without a license is valid, and that the Legislature clearly intended that the proceeding should be heard in summary manner without a jury, although the steps in the proceeding are not set forth in the act. Where these are left open in the act, it will be presumed that the course of procedure in the trial court was intended.

PROOF OF POSSESSION OF LICENSE TO PRACTICE

The South Carolina Supreme Court holds, State v. Deadwyler, 130 S. E., 332, that, in a prosecution under Civ. Code, 1922, Sec. 2415, for practicing medicine without a license, although it is necessary for the state to allege that the defendant did not have a license, the burden is on the defendant and not on the state to prove, after the act of practicing has been proven, that he had a license. The defendant knew whether he had a license or not and could have produced it, and he offered no testimony. It was also held that it was competent for a member of the state board of medical examiners to testify that he knew of his own knowledge whether the defendant had passed the board of examiners and received a license, as against the objection that this was not the best evidence.

CIRCUMSTANCES SHOWING LIABILITY FOR MEDICAL SERVICES

In an action in the Georgia courts by a physician for the value of professional services rendered by him, the Georgia Court of Appeals holds, Becker v. Humphries, 130 S. E. 379, that an allegation that the plaintiff had been licensed to practice medicine in the state of Georgia was unnecessary where it appeared that the physician was located in the state of Florida and neither the account nor the petition disclosed where the services were rendered. Moreover, the court said, it seems to be the rule that in such an action it is sufficient to allege that the plaintiff is a physician, "that he was employed as such, that he rendered the services alleged, and that the reasonable value thereof was the amount sued for. By the weight of authority, it was not necessary that the petition should go further and show that he had a license to practice according to the legal requirements of the state in which the services were performed. Of course, if it appears that the physician was practicing without a license, in violation of statute, he cannot recover. But this would ordinarily be a matter of defense. . . . The copy of the account, which was expressly made a part of the petition, shows that the plaintiff was an M. D. and this court will take judicial cognizance that this abbreviation imports prima facie that the plaintiff was a physician."

The defendant further contended that it appeared from the petition that the plaintiff was claiming a liability against the defendant for professional services rendered to a third person, and that the plaintiff could not recover therefor without showing an express agreement by the defendant to pay for such services. Even if so, the court said, the petition was sufficient to withstand the attack of a mere general demurrer based upon this ground. It alleged that the defendant was indebted on the account, and that the services were rendered "on order," the reasonable inference being that the order was that of the defendant. Furthermore, suit upon an open account may be sustained though the evidence shows an express agreement, where it is proved that the plaintiff has fully performed his part of the agreement, and nothing remains to be done except for the other party to make payment. In the nature of the action it was not necessary for the plaintiff to allege an express agreement by the defendant to pay, irrespective of whether such agreement should be proved, to entitle him to recover.

In the present case the patient was living on the defendant's farm, but there was no such relation between them as would raise a legal obligation on the defendant's part to procure and pay for the physician's services. There was, however, a continuation of these services upon repeated requests by the defendant, and, in most instances, with the defendant present assuming charge of what was done. Another physician had been in charge of the case, but had to go away, and thereupon the defendant brought in the plaintiff. Subsequently, when the patient was seen to be in a bad condition, the defendant told the plaintiff to get a nurse, which was done, and defendant paid for her services.

The court said that the preponderance of authority is to the effect that a mere request by one person to a physician to render services to another, to whom the person making the request is under no obligation to supply such services, will not raise an implied promise in favor of the physician to pay for the services when rendered. The true rule in a case of this sort seems to be that the plaintiff could not recover without showing affirmatively, either that the services were rendered under an express promise on the part of the defendant to pay therefor, or that the surrounding circumstances were such as plainly to indicate that it was the intention of both parties that the defendant would be liable. It was held that, while the evidence failed to show an express promise, the other circumstances, as disclosed by the evidence, were sufficient to authorize an inference of an intention by the parties, at the time, that the services were to be furnished on the defendant's credit, and that a finding for the defendant was warranted.

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The Present Position of the Theories of Vision and Color Vision

F. W. EDRIDGE-GREEN, C.B.E., M.D., F.R.C.S., L.R.C.P.
London

The subjects of vision and color vision are at the present time in a state of chaos. This is due to several causes, chief of which are, the extreme difficulty of the subject which embraces so many branches of science, that few are in a position to give an opinion; the great eminence of the authors of the older theories; the fanatical advocacy of supporters of these theories, many of whom do not understand them, and the continued repetition of misstatements. All the facts relating to these subjects need careful revision with the most minute accuracy of apparatus and method.

ANATOMICAL BASIS OF VISION AND COLOR VISION

The images of external objects are formed upon the outer layer of the retina, the layer which is furthest away from the front of the eye, so that light has to pass through all the other layers before it reaches the sensitive portion. This sensitive layer consists of two elements, which are called, respectively, on account of their shape, the rods and cones. There is a little dip in the centre of the retina, the fovea, and it is the region of most distinct vision. In the fovea only cones are present. In the region external to the fovea each cone is surrounded by a group of rods, and the number of rods to cones increases as portions of the retina further from the fovea are taken, except at the extreme periphery, where, again, only cones are found. In the outer segment of each rod there is a rose colored substance, the visual purple, which is photochemically sensitive to light. This visual purple is not found in the cones, but only in the rods. For this reason it was not considered to be essential to vision, because it was absent from the cones, and only cones are to be found in the fovea, the region of most distinct vision. Though the visual purple is not present in the cones of the fovea, it is found between them, four special canals aiding the flow from the periphery to the centre of the fovea. When there is no visual purple in the fovea it is blind, as shown by the varying sensitiveness of the fovea and the disappearance of objects in the central area of vision when there is no stimulation of the periphery. The rods and cones project into a thin layer of fluid, which is kept in its place by a membrane. The visual purple is diffused into this liquid and on being decomposed by light stimulates the cones, thereby setting up a nerve impulse, which causes the sensation of vision. The movement of afterimages shows that the stimulus in vision is fluid and situated outside the cones. The rods are not percipient elements but regulate the formation and distribution of the visual purple.

PHYSIOLOGICAL BASIS

The decomposition of the visual purple by light stimulates the ends of the cones, and a visual impulse is set up which is conveyed through the optic nerve fibres to the brain. The character of the impulse differs according to the wave length of the light causing it. Therefore, in the impulse itself we have the physiological basis of the sensation of light, and in the quality of the impulse the physiological basis of the sensation of color. The impulse, being conveyed along the optic nerve to the brain, stimulates the visual centre causing a sensation of light, and then passing on to the color perceiving centre, causes a sensation of color. But though impulses vary in character according to the wave length of the light causing them, the color perceiving centre is not able to discriminate between adjacent impulses, the nerve cells not being sufficiently developed for the purpose.

There are no difficulties in this transmission which do not apply with even greater emphasis to direct stimulation of the cones. Nerve impulses may differ in rate as stated by Keith Lucas. Though the position of the visual centre in the brain has been accurately determined, the position of the color vision centre is still unknown. It may, indeed, be in some portion of the visual tract between the eye and the visual centre. For instance, one portion of the end of the cone when stimulated may possess fibrils which are either connected with, or pass through, a portion of brain giving rise to the sensation of red, whilst stimulation of the other end of the cone stimulates fibrils which, with their neural connections, give rise to the sensation of violet. The intermediate portions give rise to the sensations of green, yellow and blue. It is probable that the nerve impulses bear a simple relation to wave length and there is certainly a remarkable coincidence.

Even with the normal sighted there is room for much further development in the discrimination of color, but when the development is not up to the normal standard or there is a defect in any portion of the apparatus diminishing the power of discrimination, color blindness is the result.

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THE EVOLUTION OF THE COLOR SENSE

The wave length of the physical stimulus is the physical basis of the sensation of color. How did the sensation of color first arrive? Let us suppose that the physiological effect of the physical stimulus differed according to the wave length of the physical stimulus. At a certain stage the eye had become sensitive to a fair range of the spectral rays, that is to say, evolution had proceeded to the extent of making the protoplasm sensitive to rays of light considerably above and below those which first caused a sensation of light. There was then an eye which was sensitive to the greater part of the rays which form the visible spectrum. It was, however, an eye which was devoid of the sense of color, no matter from what part of the spectrum the rays were taken. The only difference appreciated was one of intensity. Let us now suppose that a fresh power of discrimination was added to the eye and that it became able to discriminate between different wave lengths of light. What would be the most probable commencement of development of the sense of color? Most probably the differentiation of the physical stimuli which were physically most different. That is to say, the eye would first discriminate between the rays which are physically most different in the visible spectrum, the red and the violet, that is presuming that the eye had become sensitive to this range. We have examples of cases of defective light perception in which there is shortening of the red or violet end of the spectrum.

Let us now work out the evolution of the color sense on the assumption that the rays which are physically most different, namely red and violet, were those which were first differentiated. We know that the various rays differ in their effects on substances, the red rays are more powerful in their heating effects, whilst the violet are more active actinically, as is well known by the readiness with which they act upon a photographic plate.

We should now have an individual who would see the spectrum nearly all a uniform grey of different degrees of luminosity but with a tinge of red at one end and a tinge of violet at the other. There is a great deal of evidence to show that this is how the color sense was first developed. For instance, in the degree of color blindness just preceding total, the spectrum is seen in this way.

It will be noticed in the first evolution of color that the added power of discrimination is something distinct and separate from light perception. It can be destroyed as by mixing the two colors without interfering with the perception of light. Here we have the foundation for the distinction between light and color perception the proper recognition of which is so essential in physiological optics. As the color sense developed it was not necessary that the rays should be so far apart before a difference was seen, so the two colors, red and violet, gradually encroached on the grey band until they met in the centre of the spectrum.

We have now a series of cases each of which only sees two colors, red and violet, with a varying degree of grey band in the centre of the spectrum. We should expect that those who had the smallest white region left in the centre of the spectrum would have the best color perception, because they belong to a later stage of evolution.

Cases of color blindness are found corresponding to all these degrees, from almost total color blindness to those bordering on the trichromic.

In all the dichromics a mixture of the two colors which they perceive, namely red and violet, will form white and so we have the foundation of complementary colors.

The next stage in the evolution of the color sense was when a third color appeared at the third point of physiological difference, that is in the centre of the spectrum in the position of the green.

The color sense now assumed a trichromic form, red, green, and violet, being seen in the spectrum.

As green replaced the grey which existed in the spectrum of the dichromic we should expect that green should be complementary to the other two colors combined, and this we find to be the case.

We have now reached the stage in which three distinct colors were seen in the spectrum, namely red, green, and violet, and the vision had assumed the trichromatic character which must henceforth remain.

When the green was first developed it was a comparatively unimportant color. As evolution proceeded the power of differentiation occurred in the regions between the red and the green, and the green and the violet until a stage was reached in which a fourth color, yellow, was seen at the next point of greatest physiological difference.

The next step in the process of evolution occurred when the retinocerebral apparatus was able to differentiate a fresh color between the green and the violet, namely blue, five definite colors being seen in the spectrum. It will be obvious that in any further evolution the intermediate portions will be still further differentiated and so we arrive at those who can see six and seven colors in the spectrum, respectively.

It is not necessary to consider the further evolution of the color sense because I have not met with a person who could distinguish more than seven definite colors in the spectrum.

CRITICAL CONSIDERATION OF THEORIES OF VISION AND COLOR VISION

One of the most popular theories is the socalled duplicity theory of Von Kries. This supposes that the rods are percipient elements for perception in a dim light, whilst the cones are the percipient elements in daylight. This theory is a very irrational one, for it is difficult to conceive an element stimulated by the decomposition of a photochemical substance which is excited by a weak light and not more strongly by a brighter light. What is the supposed function of the rods during the daytime? Apart from the numerous facts against this theory, it will be found that it is supported almost entirely by misstatements namely, 1, that certain animals have only cones, and others have only rods; 2, that the periphery of the retina is color blind; 3, that the eye is totally color blind in dark adaptation; 4, that the Purkinje phenomenon and the recurrent image are not found with the fovea. With regard to these I offer the following criticisms:

1. Though I have examined numerous collections, I have never been able to find any animal with only rods or only cones, neither have I found anyone who has seen such a retina. The tortoise is the most quoted; it is stated to have only cones. The rods and cones in the retina of the tortoise are as clearly

defined and distinct as in the human retina. 2. The periphery of the retina is not color blind when colors of sufficient intensity are used. The reader can test this for himself with a doctor's red lamp. We will find he can see it as red to the extreme periphery. 3. In dark adaptation the eye is not totally color blind. Those interested in the subject should read the masterly paper by Burch on Color Vision by Very Weak Light (1). Further, there is no scotoma or blind area corresponding to the rod free portion of the macula which is equal to a visual angle of about three degrees. 4. The Purkinje phenomenon and recurrent image are found with the fovea.

It is difficult to comprehend how vision can take place on this theory. How are the central connections in the brain arranged in order to obtain localization, especially with a large scotoma in the most important part of the field of vision? It has been shown that this scotoma only exists in certain circumstances. As a small red light is quite visible on a dark night, and this is seen with the fovea, calculation will show the very small amount of light falling upon the eye, by which it is visible.

How on this theory are the transparent cones stimulated by light? The laws of photochemistry require absorption for photochemical action.

THE TRICHROMATIC THEORY

The trichromatic theory has been very imperfectly understood; it presupposes three elementary and independent sensations, the stimulation of which in various proportions causes all sensations of color. According to this theory, therefore, there are three separate kinds of light sensation, and there is no fact supporting this hypothesis. Normal color vision is trichromatic, and it is trichromatic on my nonelemental theory, but it is trichromatic in the sense of color only and not in the sense of perception of light intensity. The facts of color mixing do not, as is so often stated, support the trichromatic theory because the facts are equally well explained by other theories, including my nonelemental theory. On the trichromatic theory, light of a certain wave length, no matter what may be the source, stimulates in definite proportions one or more of the three fundamental sensations. Therefore, exact matches are supposed to have similar physiological bases.

Now each set of facts requires a different set of fundamentals, which makes the theory quite untenable. Let us compare, for example, the fundamentals of Abney and Burch. Abney gives the red sensation as affected by light of all wave lengths, Burch gives the red sensation as affected by light from λ 760 $\mu\mu$ to λ555 $\mu\mu$ with other points of difference. Abney gives λ548 $\mu\mu$ as stimulating the fundamentals, in sensation luminosities in the following proportions: red sensation 49.7, green sensation 35.6, and blue sensation 0.035. Dr. Troland writing on the same subject, using the word minuthesis instead of fatigue, gives his results as follows:

"The general conclusion to be drawn from the work is, therefore, that minuthesis due to one color does not alter the luminosity of another color to a degree differing appreciably from that in which it is altered itself. In other words, the change in sensitivity to brightness occasioned by stimulation of the retina is independent of the wave length constitutions of the minuthetic and of the reacting lights. This seems to imply that the luminosity function is not essentially linked with the color or chromatic function and stands in contradiction to the views of Abney, Ives, and others who treat luminosity as the sum of the primary color values of any stimulus. The present results appear also to conflict with experimental data along similar lines published by Abney and by Burch, so that further study of the problem would seem to be required on a larger number of subjects." These results are in agreement with those of A. W. Porter and myself (2).

If the eye be fatigued with pure yellow spectral light the spectrum will appear to have lost its yellow, and though yellowish red or yellowish green will appear less yellow the terminal red of the spectrum will not be affected. If the terminal portion of the red end of the spectrum be isolated in my spectrometer it will appear as a faint red upon a black background. If the eye be fatigued with red light even by looking through a red glass held against a light for one second, the red will not be visible for some considerable time, but the eye may be fatigued for twenty minutes with yellow light without interfering with the visibility of the red light. It should be noted that Abney gives the percentage composition of the sensations stimulated by light of τ 585 $\mu\mu$ as 75 red sensation, 25 green sensation, therefore on the trichromatic theory fatigue by yellow light fatigues the red sensation.

Besides being loaded with subsidiary hypotheses inconsistent with each other, the differences between two presentations of the theory are as distinct as two independent hypotheses. Abney gives the violet as a compound sensation having the percentage composition of 72 red sensation and 28 blue sensation. Burch gives very strong evidence showing that violet is a simple sensation. If the positive after image of a complete spectrum be obtained it will be noticed that it disappears from the red to the violet end. If yellow consisted of a mixture of red and green its positive after image should change to green before disappearing; this is not the case and can be tested in the following way. In an absolutely dark room, if pure spectral yellow light be thrown on a white screen and a flicker apparatus rotated slowly in front of it, the yellow will not change its hue.

Whilst the nonelemental theory given is in complete agreement with all the known facts of color vision, there is no fact in support of an elemental theory. It is probable that spectral light sets up impulses corresponding to light of adjoining wave lengths and when the stimulation is very violent as in the experiments of Burch who used a convex lens with direct sunlight a considerable range may be affected.

Space will not permit my giving numerous facts showing that yellow is a simple and not a compound sensation. Color blindness cannot be classified on an elemental theory. Abney has endeavored to do this, but check experiments show that his conclusions are untenable.

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1. Burch: Color Vision by Very Weak Light, *Proceedings of the Royal Society*, Vol. 763, page 199.

2. Porter and Edgidge-Green: *Ibid*, 1912; *Physiology of Vision*, G. Ball & Sons, London, page 248.

99 Walm Lane, Willesden Green, N. W. 2.

Fracture of the Hip in Adults*

JOHN T. O'FERRALL, M.D.
New Orleans, La.

Fracture of the neck of the femur has been chosen as the subject for discussion because it is of great importance. It should be brought frequently before gatherings of general medical men, to keep it ever fresh in their minds. Indifferent treatment of fractured hips prevails in all communities. It is frequently looked upon as one of the natural complications of middle life and old age, the treatment of which is useless. This erroneous conception of such an injury is, in my opinion, the result of nonprogressiveness and requires repeated publication of the proved facts in order to correct it. The forward march of surgery has brought forth much of importance in the diagnosis and treatment of this condition. It is my purpose to call attention as concisely as possible to the most important and practical points of both. Such fractures represent a serious problem and require scientific treatment. This does not, however, justify the neglect of such cases so often seen, using as an excuse lack of facilities, for the proper treatment can be carried out in the smallest community. Few serious disabilities are so amenable to treatment and the end result so satisfactory, except in occasional instances. A total disability can be largely relieved and an otherwise helpless invalid restored to usefulness and the joy of living, free from physical dependence.

ANATOMY OF HIP

The anatomy of the hip is intensely interesting and represents a subject for prolonged study in itself. We are particularly concerned at this time with a review of the structure of the neck and head of the femur and their blood supply; together with the important ligamentous attachments. To quote from *Gray's Anatomy:* "This arrangement of the cancelli in the ends of the femur is remarkable. In the upper end they are arranged in two sets. One set, starting from the top of the head, the upper surface of the neck, and the great trochanter, converges to the inner circumference of the shaft; these are placed in the direction of greatest pressure, and serve to support the vertical weight of the body. The second set are planes of lamellæ intersecting the former nearly at right angles, and are situated in the line of the greatest tension—that is to say, along the lines in which the muscles and ligaments exert their traction. In the head of the bone these planes are arranged in a curved form, in order to strengthen the bone when exposed to pressure in all directions." In this connection, a recent article in the *Journal of Bone and Joint Surgery* by Anatole Kolodny reports an exhaustive study of the upper femoral end. He says: "A good, clear röntgenogram of a femur sectioned in different planes shows other interesting points of structure. The neck of the femur seems to consist of bone lamellæ which arise from the shaft and extend from it in a rather peculiar way. The bone lamellæ which arise from the external side of the femur shaft (external condyle) arch towards and run farther in the neck, continue there and end in the femoral head perpendicular to its surface. These bundles of trabeculæ prevent the laceration of the neck; they are the tension lamellæ. From the internal condyle other bundles of bone trabeculæ arise which run to and into the neck, cross the tension lamellæ at a right angle and end in the femoral head perpendicular to its surface. These are the pressure lamellæ. They counteract the compression of the neck. In arching towards the femoral head and neck both groups of bone lamellæ wind spirally.

"The crossing of the tension and pressure lamellæ takes place mainly in the femoral head. The head is composed of a scanty substantia compacta and of numerous spongiosa trabeculæ which are arranged like the spokes of a wheel. These trabeculæ are interwoven with those which come from the neck, interlacing like the groins of a gothic arch. Besides the tension and pressure lamellæ described above, there are bundles of bone lamellæ which run from the lamina femoralis interna to the great trochanter. These lamellæ cross the tension lamellæ at right angles. As is seen, all these three systems of bone lamellæ describe, by their main masses, a triangular space which is poor in bone trabeculæ. This is Ward's triangle (trigonum internum femoris), mentioned by Ward in 1838. Our study leads us to believe that this triangle is the point where atrophy and rarefaction of the upper femur begin in general skeletal atrophy and in old age. While in young, strong, muscular and bony persons the triangle is filled with spongiosa bone, in elderly persons this space is lacking any bone trabeculæ, and because of this it diminishes the margins of safety of the femoral neck, and is therefore a locus minoris resistentiæ of the femoral neck. Fractures are produced through this area when the isolated femur is subjected to vertical compression."

The most important ligaments attached to the upper femur are the a, iliofemoral; b, ischiofemoral and c, the capsular ligaments. The shortening found in cases of fracture of the neck is produced by the upward pull of the muscles attached to the greater trochanter and possible shortening of the iliofemoral or Y ligament. This ligament is attached above to the anterior inferior spine of the ilium and passes over the front of the joint and neck of the femur in two bands, one of which is attached to the anterior surface of the intertrochanteric line at the lesser trochanter and the other into the same line near the junction of the neck and the greater trochanter. The ischiofemoral ligament is a short band extending from the ischium, just below the acetabulum, to the posterior surface of the neck of the femur, blending with the circular fibres of the capsule. Kolodny's dissections indicate that this ligament checks internal rotation and when the neck of the femur is fractured this ligament is made more tense by hemorrhage and engorgement, thus producing external rotation of the leg or eversion of the foot.

*Read before the Rapides Parish Medical Society, Alexandria, La., August 3, 1925.

The capsular ligament is attached above to the acetabulum and the cotyloid ligament. It envelops the head and neck of the femur and is attached below to the intertrochanteric line in front; above to the base of the neck; behind to the neck about one half inch above the posterior intertrochanteric line. From this insertion the fibres are reflected upward over the neck of the femur, forming a tubular sheath. It is this reflection which may be the interposing soft parts in some cases of ununited fracture of the femoral neck.

BLOOD SUPPLY OF HIP

In discussing fractures of the femoral neck, consideration of the blood supply is of great moment. It is still a question as to the exact vascular nutrition of the hip. *Gray's Anatomy* states, in describing the neck of the femur, that the anterior surface is perforated by numerous vascular foramina, the posterior surface is smooth and the superior border is also perforated by large foramina. No description of the inferior surface is given. It is apparent from this statement that vascular nutrition of the femoral neck is derived, to a considerable degree, from the periosteum. Kolodny states that the head and neck of the femur receive blood supply also through the ligamentum teres, the epiphyseal bloodvessels and the diaphyseal vessels, in the child and the newborn. In middle and advanced age the ligamentum teres is very much atrophied and often absent; its blood supply is therefore of little consequence.

Upon fracturing the femoral neck the diaphyseal bloodvessels are broken along with the bone tissue, and another source of vascular nutrition is taken away from the femoral head and neck. If displacement of the fragments occurs, the periosteal branches are torn and the head of the femur is then entirely dependent upon the few epiphyseal vessels to give it nutrition. Trauma often disturbs these latter vessels and the head of the femur is left without sufficient blood supply. It is no wonder then that marked atrophy of the head and complete absorption of the neck so often occurs in fractures of the type under discussion, especially when inadequate treatment is given. Kolodny correctly says, "prognosis of a fracture of the neck depends entirely upon the displacement and angulation of the fragments." It is frequently advised that impaction of fractured femoral necks should be broken up and the fragments subsequently reduced. I am convinced that impaction in such instances should not be disturbed. The end results experienced justify this assertion. Impaction of fractures, in general, should not be broken up, unless a joint is involved or unusual deformity exists.

CAUSES OF HIP FRACTURES

These fractures occur principally in patients of middle and advanced age. Twenty-seven per cent. of all fractures of the femur are of the neck. Recent experience has shown that they occur more frequently from the age of forty upward than was formerly thought. Among the aged, females are affected more often than males. Except in industrial cases, the injuries producing these fractures of the neck of the femur are slight. Such mild trauma as stepping unconsciously from an elevation of a few inches often produces the disability. Unquestionably, direct trauma (or indirect trauma transmitted directly to the neck of the femur) generally is the exciting cause of the fracture; however, in many instances the fracture occurs from simple superimposed weight before a trauma or fall occurs. In other words, vertical compression has occurred. According to Kolodny, the majority of fractures occur as the result of a fall on the hip (trochanter), which fracture is then produced by trochanter lateral compression. The history in such fractures often reveals such simple accidents as tripping on a rug, stepping from a car or carriage quickly or slipping on a wet pavement.

CLASSIFICATION OF FRACTURES

The types of fractures of the femoral neck are divided into two classes, first, intracapsular and second, extracapsular. This classification is not accurate because of the oblique attachment of the capsule on the femoral neck. Thus many fractures are partially extracapsular and partially intracapsular. In most instances they are entirely intracapsular. A more accurate classification is, first, fractures at the base of the neck, and second, fractures of the neck near the head. Various authors maintain that the former are by far the most common, especially in the aged.

The question of impaction in these fractures has been previously alluded to. I would like to emphasize, however, that impaction is a condition of value in healing in these conditions rather than a menace.

DIAGNOSIS

The diagnosis of such hip fractures is generally not difficult. The history of a fall or a sudden twist of the leg, especially in a person of middle or advanced years, is generally related. Inability to arise after the fall, associated with soreness in the region of the trochanter is fairly typical. It may happen, however, that impaction has occurred and the patient is able to walk for some distance, although with pain. One patient, in my experience, walked up a flight of stairs to her bedroom, then to the bath and back again, without great difficulty. The pain is generally referred to the region of the trochanter but may be intense at the knee. This latter area may be the only painful one and should always be kept in mind by the examiner. The patient should be examined properly draped but free of all clothing. Swelling and redness are absent, unless the trauma has been direct and severe. External rotation of the leg, frequently spoken of as eversion, always exists. This position is produced largely by the ischiofemoral ligament and the rotators of the thigh. Careful measurement of the legs reveals shortening of the affected member, varying with impaction and complete fracture, greater, of course, in the latter. Any attempts at manipulation of the hip greatly increase the pain in the hip or that referred to the knee. The trochanter is above Nelaton's line. Crepitus may be made out in complete fracture but is absent in cases of impaction. Prolonged search for crepitus or abnormal mobility should not be attempted. In cases of complete fracture the patient cannot lift the affected heel from the bed. By keeping in mind the above signs and symptoms along with gentle palpation, the diagnosis is generally made without difficulty.

X ray examination is, of course, not only desirable, but necessary. These radiographs should, if possible, be made stereoscopic and of both hips. In any event, an exposure of both hips should be made. This is particularly important if the plates or films are to be read by one who has had a limited experience, as any abnormality is more readily recognized by means of comparison.

METHODS OF TREATMENT

In order to facilitate discussion of the treatment of these fractures of the femoral neck, it seems wise to divide them into two types, namely, a, surgically nonoperative, and b, operative treatment. The former method is the one we are most frequently called upon to carry out and the results therefrom are most satisfactory. The latter method we find necessary to use in the cases of nonunion, a limited number of which occur irrespective of the type of treatment used from the time of the occurrence of the fracture; and many result from indifferent and improper treatment.

NONOPERATIVE TREATMENT

The surgically nonoperative type of treatment is so designated to indicate that no open operation is done. As is the case in the treatment of all fractures, our first efforts are directed toward complete reduction and maintenance of the bone fragments in apposition. This is of even more importance in fractures of the femoral neck because of the poor nutrition of the bones involved. The abduction method of reduction and fixation for these cases as described by Royal Whitman meets these requirements in an almost ideal way and takes precedence over any other method of treatment. This is not only a personal opinion, but I am supported in it by such men as Scudder, Brackett, Osgood, the Mayo Clinic, and numerous other surgical men throughout the world. To quote Whitman's own words in describing this method is interesting.

The abduction method has three great advantages over any other method—comprehensive mechanical effectiveness, single control, and general availability. In fractures of the neck of the femur, the head being fixed in the acetabulum, the displacement is always of the outer, or limb, fragment. If the separation is complete the displacement is usually upward, backward, and outward, and to oppose the fragments the limb must be lifted forward, rotated inward, and drawn downward to its normal length. But, since the neck of the femur projects from the shaft at an angle, the apposition is in a lateral relation and is unstable because there is no point of resistance. If now the limb be abducted to the normal limit, the extremity of the neck is brought down to a horizontal plane. As the capsule surrounds each fragment, its tension, consequent on abduction, aligns them, and since the head is fixed by the acetabulum, it forces an end to end and resistant contact. Furthermore, at the limit of abduction the upper border of the shaft fragment and the trochanter are opposed to the rim of the acetabulum and the side of the pelvis. Thus, security is assured by the tense capsule, by direct and indirect bony contact, and by the muscular impotence incidental to the attitude of complete abduction.

When this adjustment has been accomplished, a long plaster spica is applied, fixing the limb in full extension, full abduction, and slight inward rotation. Although the spica is a direct support, its chief function is to hold the limb in the selected attitude that makes the internal or anatomical splinting effective, as may be demonstrated by x ray examination through the plaster at intervals of weeks or months.

The abduction method is adequate because it utilizes the construction of the joint and its mechanical environment to reduce deformity and to fix fragments in apposition.

The plaster spica is applied with the patient under a general anesthetic and preferably on a fracture table, but any sacral rest will answer. The legs are extended by two assistants until the shortening has been overcome, as demonstrated by actual measurements. The affected leg, which is generally in outward rotation, is then rotated internally until the patella points slightly inward. With traction still being exerted, both legs are abducted to the normal limit. The plaster is then applied, including the foot, and the portion including the body should be much higher opposite the affected leg to assist in preventing adduction. The knee is slightly flexed in the plaster to relieve strain and discomfort.

There is some argument against the use of a plaster spica for the treatment of the middleaged and those older, on the grounds that it is uncomfortable. This is a great error and undoubtedly arises from ignorance and inexperience. It is a great advantage over methods requiring extension, as the patient can be turned from side to side and even on the abdomen, this, of course, assisting in the prevention of hypostatic pneumonia, bedsores, etc. The head of the bed is usually raised one to two feet, which is more comfortable and gives the patient an easy view of her surroundings. It also promotes the circulation to the affected leg and hip, thus assisting repair. The patient often is able to get around on crutches in the spica and in the wheel chair or on a carriage. The spica remains on for a period of from eight to twelve weeks. The removal of the splint is followed by rest in bed and massage. Weight bearing should not be permitted under six months and often longer, depending upon the rapidity of repair. A weight bearing caliper splint is advisable to transfer the weight to the pelvis rather than to be borne by the affected femoral neck.

By far the greater number of favorable results are obtained by the abduction or Whitman method. There are, however, other methods which give favorable results in some instances but with which the same degree of complete reduction and accurate apposition cannot be assured. Any method, the guiding principle of which is extension and counter-extension, is of very great disadvantage. It is exceedingly trying on the patient to remain continuously on her back or even in the semirecumbent position. Such posture furthermore increases the danger of hypostatic pneumonia, and almost certainly bedsores will result. All of the remaining methods to be mentioned have this principle of extension and are therefore considered unsatisfactory.

Scudder reports the results existing in sixteen cases of fracture of the hip many years after the accident. These sixteen cases were treated by trac

tion and immobilization for periods varying from a few weeks to a few months. The patients then went about with crutches. No other treatment was used. Nearly all the cases were unimpacted either primarily or secondarily. At the time of the accident seven patients were between forty-two and forty-seven years old, the remainder, except in two cases, were over fifty; three were over sixty years old. These patients reported for examination from two and a half to twenty-four and a half years after the accident. Thirteen of the sixteen patients have impairment of the function of the leg; a weakness of the limb, requiring a crutch in many instances; atrophy of the affected member; limitation of motion of the hip; pain in the hip often requiring a cane. The conclusion is evident that the old time method of treatment of hip fractures by extension is not productive of satisfactory results.

The Maxwell-Ruth method is often suggested and it employs traction in two directions, i. e., longitudinal and lateral extension. It is probably the most important of the traction methods but has the disadvantages described above. The same can be said of the Hodgins splint, the overhead suspension traction methods and numerous other adaptations of these last mentioned. I have even heard it recommended that patients with these fractures be treated with rest in bed and the affected extremity supported only with sand bags. Occasionally a fracture of the femoral neck firmly impacted might recover with such treatment but it could not be considered a method supported by good surgical principles and sound judgment.

OPERATIVE TREATMENT

The operative type of treatment applies to those cases of fracture of the femoral neck in which bony union has not taken place or in which a painful fibrous union is the result. These cases usually come to the orthopedic consultant many months or years after the initial injury. The greater part of the neck is absorbed and the shallow head is left in the acetabulum. The trochanter and upper end of the shaft have no fixed position and the leg is almost entirely useless.

The causes of nonunion are not numerous and are easily explained. A certain number of fractures of the neck will result in nonunion irrespective of the type of treatment given from the time of the accident. This state of affairs is undoubtedly due to interruption of a large part of the circulation to the part involved, namely, the neck and head of the femur. As I have previously pointed out, a fracture through the neck deprives the head and the remainder of the neck of the diaphyseal circulation, and if the fragments are displaced the periosteal vessels are also ruptured, leaving only the epiphyseal circulation, which in the middleaged and older subjects is scanty. The formation of callus is therefore practically impossible even though the fragments are in fair apposition.

Inadequate treatment of course accounts for many cases of nonunion. The attending physicians often forget the necessity for complete reduction and careful maintenance of the fragments in apposition. Indifferent treatment is not a deliberate act but often occurs because the patient is old and the physician fails to realize that the treatment above described is far more comfortable than the long period of suffering and invalidism accompanying nonunion.

Interposition of the capsule of the hip or its reflexion at times occurs. This is especially true if the hip is not completely abducted and full advantage taken of the tubelike shape of the capsule acting as a coaptation splint.

Early weight bearing may be the cause of nonunion, whereas, if it had been avoided a functional result would have existed. It must be remembered that the formation of callus is directly dependent upon circulation. In this area under discussion, where circulation is so poor, the throwing out of new bone of necessity will be very slow, requiring a much longer time for complete healing. Long fixation in good apposition is necessary, checked up frequently by radiographs before weight bearing should be considered. Even then a properly fitted caliper splint should be worn to protect the injured hip.

The existence of constitutional diseases, such as syphilis and tuberculosis, exert their influence on the formation of new bone and thus may be the cause of nonunion.

There have been numerous methods of operation suggested for the repair of ununited fractures of the femoral neck. The more practical methods will be described in detail and some of the remainder mentioned.

As I said in a previous paragraph, these patients usually come for consultation and treatment many months or even years after the injury. The patient is unable to take her weight on the affected leg and pain is bitterly complained of in the hip and the sciatic distribution. Crutches are necessary. Pain often prevents sleep. Physical examination reveals the disability at once. There is marked external rotation, inability to raise the heel from the bed, marked shortening and unusual mobility of the hip joint. The x ray examination shows a complete absorption of the neck of the femur and only the devitalized head in the acetabulum. A study of the radiographs will show the absolute futility of using bone grafts, bone or metal screws, or large metal nails in an effort to bring the fragments into apposition. Even if it were possible to do so, union could never take place between the devitalized and fibrosed surfaces of the fragments.

TECHNIC OF BRACKETT'S OPERATION

The method of choice, without doubt, is that described by Dr. E. G. Brackett, of Boston, and which, concisely stated, is the transference of the head of the femur to the trochanter. An incision is made from the anterior superior spine of the ilium to the middle of the trochanter, turning downward, parallel to the shaft of the femur, for six inches or more. A counter curved incision is then made, at the angle made by this incision over the trochanter, extending backwards and upwards three or four inches. The tensor fascia femoris and gluteus medius are separated, the muscle attachments on the outside of the trochanter are removed subperiosteally, or with a thin bone attachment, and the top of the trochanter removed so as to save the attachment of the gluteus minimus and pyriformis. These muscles are then all turned backwards and upwards, and the upper and anterior portion of the capsule exposed, to the edge

of the acetabulum. The capsule is opened longitudinally to its fibres, on the upper portion of its anterior surface, saving the attachment of the Y ligament, if possible, but which cannot always be done. The trochanter is cut off just below the level of the upper edge of the head, the inner portion of the shaft rounded to correspond to the curve of a one and a half to two inch radius. The outer end of the shaft is cut off obliquely. The free surface of the head is thoroughly freshened and a curved depression fashioned in it to correspond to the curved inner end of the shaft being brought directly into the concaved head, and in this position is firmly held against it. In this way the femoral head with its freshened surface is placed directly on the freshened cancellar surface of the trochanter.

It is to be noted that the head is placed on the inner side of the femoral shaft and not on the end of the trochanter. Upon reassuring oneself that the head and shaft are in the relation desired the capsule is closed, the leg being held in this position until the operation is finished and the plaster spica applied. The small pieces of bone with the attachments of the gluteus medius and minimus, and pyriformis, are secured to the outer side of the shaft or to the periosteum. The wound is then closed in layers and the plaster spica applied. This plaster splint should extend well up to the chest wall on the side opposite the affected leg, to prevent abduction, and it should also include the unaffected thigh to the knee and the affected leg and foot. The position of the foot should be very slight internal rotation. Fixation should be continued for two to three months, followed by change of plaster and x ray examination. Two to three additional months of fixation should then be required before weight bearing is allowed.

A very interesting and important fact to be observed in this operation is that there is practically no shortening of the affected leg. The new neck and head permits an unusually large range of motion, especially in abduction and flexion. Among the lantern slides will be seen the results obtained in a case I have recently operated upon. The patient is walking, using crutches, as her period of weight bearing has just begun. It is important, in considering a patient for this operation, to be sure that no arthritis involving the femoral head exists. If such a condition was overlooked a very painful and disappointing end result would ensue. It would seem in cases in which an arthritis of the head exists that the Whitman reconstruction operation is indicated and would give a painless and stable result.

WHITMAN OPERATION

The Whitman reconstruction operation may be performed through the incision and approach described for the Brackett operation. There are of course numerous methods of approach to the hip joint to meet all existing conditions. "This operation," says Whitman, "is primarily designed for the treatment of ununited fracture of the neck of the femur in which direct union of the fragments by bone grafting or other means is doubtful or impracticable." It seems particularly useful in cases in which an arthritis of the head exists in addition to the fracture. (As long as the head of the femur is in good condition the Brackett operation is the method of choice.)

OBJECT OF SURGICAL TREATMENT

Since these patients suffer a great deal of pain in addition to the functional disability, the object of surgical treatment is to relieve the former and restore the latter. This operation is known as a reconstructive one because it restores stability in weight bearing with a fair range of controlled motion. The head of the bone is removed from the acetabulum. The trochanter is then cut off at the base on a line with the neck. It is turned up with its muscular attachments. The projection of the shaft, shaped somewhat like a new femoral neck, is trimmed up as required and inserted into the acetabulum. In order to accomplish this the leg must be abducted to about 25 degrees. A new bed for the detached trochanter is then made by elevating the periosteum and removing a small section of the cortex at the point on the shaft to which the muscles attached to the trochanter will allow it to come. It is sutured down in this bed as firmly as possible to insure bony union. The leg is then fixed in a plaster spica in abduction for several weeks until the trochanter has firmly united. Passive and gradually increasing active motion is then begun. The limb is used in slight abduction and the range of motion is sufficient for ordinary function. The operation is fairly quickly done and may not produce excessive shock even in an individual already weakened by long confinement.

OTHER METHODS OF TREATMENT

The medical literature is full of articles referring to and advocating the use of bone grafts, iron nails and screws, bone screws and ivory pegs for the repair of these ununited fractures of the femoral neck. Even a casual glance at the x ray negative of the average ununited fracture of the neck will convince you of the mechanical impossibility of bringing the fractured surfaces in contact by any of these methods. The greater part of the femoral neck is absorbed, thus preventing apposition and even if such could be accomplished the surfaces of the fragments are covered with a very dense, resistant fibrous tissue, preventing the throwing out of new bone tissue.

Ununited fractures of any bone and especially of the femoral neck cannot be considered as such until proper apposition has been accomplished and ample opportunity given to permit union. Certainly we are not justified in using any of these methods of open operation and the insertion of various foreign substances early in the treatment of the fracture and before opportunity has been given for union in the usual, ordinary way. Local literature has contained several articles recently advocating the use of metal screws as soon as the fracture occurs. I am sure you all agree that this is surgically unsound because it violates all the recognized laws for the treatment of fresh fractures; it subjects poor surgical risks already shocked to greater shock and opens up avenues to infection which need not exist. We all know that bone tissue and also soft tissues resent metallic foreign bodies and the percentage of infections from their use is large, even if perfect technic, as advocated by Lane, is used. I dare say few of us would submit to such treatment with the facts outlined above before us. This method is not a new one but was used many years ago, and justly discarded.

3411 Prytania Street.

Observations on the Minimization of Deformity and Disability Following Fractures*

MARK COHN, M.D.
New York

I am sure that most of us see some end results following fractures, that are not entirely satisfactory either to ourselves or to the patient. In some of the cases the resulting deformity and disability are inevitable because of the nature of the injury. In others, however, we cannot escape the feeling that the end result could have been better. It cannot, therefore, but be of the greatest interest to consider some of the ways in which deformity and disability following fractures can be minimized.

The goal that we must keep foremost in our minds in the treatment of fractures is to obtain restitution of function with as little deformity as possible. In order to obtain this, proper reduction of the fragments is necessary. As reduction is in most instances a very painful procedure, it is highly desirable that the patient be given a general anesthetic. This not only makes the procedure painless, but also causes a relaxation of the muscles, preventing them from pulling the fragments in an abnormal direction. Proper alignment and apposition of the fragments is thus more easily obtained.

While it may hardly seem necessary to mention the importance of x ray pictures both before and after reduction, many instances are still seen where the practitioner does not take advantage of this very important aid to diagnosis and treatment.

The doctor must safeguard the patient's best interests and also protect himself. If only from purely selfish motives he should not place himself in a position where he will be open to criticism and liable to be sued for malpractice.

Apropos of this, Mr. R. C. Elmslie, orthopedic surgeon to St. Bartholomew's Hospital, London, quoted in a letter to the *Journal of the American Medical Association* (December 31, 1921, p. 2132) states that "Every case of fracture should be treated as a possible medicolegal one. If a röntgenogram is not taken the reason should be stated in writing. Physicians should not commit themselves to statements as to the nature of the injury without röntgen ray evidence."

Sir Robert Jones in his *Notes on Military Orthopedics* states that malunion of a fracture can always be prevented and should raise a strong presumption of inefficient treatment. X ray pictures are essential in the treatment of fractures to prevent deformity.

If the case warrants it we should not delay calling in additional assistance. If we assume entire responsibility of the case we run the risk, if the result is displeasing to the patient or his kin, of a suit for malpractice.

Of course. a proper knowledge of the anatomy and mechanics of the injured part is essential. If there is overriding of the fragments in fractures of the long bones sufficient traction must be applied to overcome this deformity.

In the reduction of a Pott's fracture the relation of the foot to the leg must be restored in such a way that after the fracture has healed the weight bearing line passes through the ankle and foot as near to the normal as possible and that the motions of the ankle joint and tarsus be conserved.

After reduction has been accomplished it is necessary to place the part at rest in a position which will best maintain proper alignment and apposition of the fragments. It is an inherent characteristic of living tissue when it is injured to undergo a healing process. In his treatment the physician can only assist Nature's method and the best way to do it is to place the part at rest. This is done by means of sand bags, splints, plaster cast, brace, etc., according to the age of the patient, location of the fracture and other circumstances.

One of the important points in immobilizing is to make sure that the circulation of the part is not interfered with. It is best to postpone the application of the final immobilizing dressing until the swelling of the soft parts has reached its maximum. If a plaster cast is used it can be split longitudinally down to the cotton to allow for any possible additional swelling. The dressings should fit firmly but not too tightly. Bony prominences subjected to pressure should be well padded. When applying plaster of Paris bandages they should be rolled on with just the proper tension.

After the application of immobilizing dressings to the extremities the color of the fingers and toes should always be observed for circulatory disturbances. For this reason the tips of the fingers or toes should remain uncovered when applying dressings which include the hand or the foot. Nowadays we do not see many cases of socalled Volkmann's ischemic paralysis which result from interference of circulation of the part while it is immobilized.

Now let us consider the important problem of conserving and restoring function. It may be stated as a general principle that when a part is immobilized, it should be held in that position which will be most favorable to the return of normal function when the injury is healed.

While the fracture is healing under the immobilizing dressings the physician can materially assist in the early restoration of function. Passive motion of the neighboring joints can generally be cautiously begun during the first week.

We have seen a considerable number of cases of fractured forearms, especially in elderly persons, who in the course of, or after treatment, complained of pain and stiffness of the shoulder and arm of the affected side. Examination in these cases showed that voluntary motion of the shoulder joint was considerably restricted and painful as were also efforts at passive motion. The muscles about the shoulder joint showed varying degrees of atrophy. On questioning, the majority of the patients denied the presence of

*Read at the meeting of the North Bronx Medical Society, New York, January 14, 1926.

shoulder symptoms previous to the injury. The symptoms are generally noted at the time when the arm is released from the sling and the cast or splint removed. The cause of this condition is the lack of exercise of the shoulder joint in the course of the treatment. The patient feels more comfortable and secure with his arm in a sling and sometimes even wears the sling in bed. Of course, in the early days of the fracture, this limitation of motion at the shoulder is instinctive because of the pain; but after the first week the patient sees no necessity to move the shoulder. The physician probably does not pay much attention to the shoulder either, his efforts being entirely centred on the fracture itself, and the patient may be allowed to wear the sling until the fracture has completely healed.

The lesson to be learned from this is obvious. In our fractured forearm cases we should do away with the sling as early as possible. Passive motion of the shoulder joint should be begun early and continued daily during the course of the treatment if necessary. The patient should be encouraged to move the shoulder to the normal range of motion in all directions. At first these exercises are best done in the recumbent position by the physician, nurse or a member of the family who has been properly instructed. Care must be taken to make no motion which will disturb the fracture.

Similar conditions are sometimes seen in the joints of the hand, wrist or elbow, in fractures of the arm or forearm. They are generally preventable by early mobilization.

Stimson (*Fractures and Dislocations,* eighth edition, 1917) advises as follows: "In the treatment of all fractures of the arm and forearm the fingers and thumb should be left free and the patient should be enjoined constantly to move them. If the dressing must include the hand it should be so arranged that the wrist will be in slight dorsal flexion, the fingers flexed but free to be extended and the thumb abducted, because these attitudes tend to retard and diminish the ill effects of confinement and lack of use. If the fingers must be confined they should be in flexion."

One of the important adjuncts to the early restoration of function is massage. This should be begun early. It should not be limited to the parts more or less distant from the fracture but can also be applied to the region of the fracture itself.

If the limb is immobilized by a plaster of Paris cast, the cast can be cut into anterior and posterior halves by means of sections along the inner and outer aspects down to the cotton covering the limb.

The anterior half can be lifted off during the treatment, or the cast can be completely cut through on one side only and the front lifted up as if on a hinge. The posterior portion of the cast supports the limb and maintains the proper position.

The massage should be given over the cotton and limited only to gentle stroking movements at first and for a short time. Gradually the movements can be made stronger and the time of the massage lengthened. Naturally there is considerable sensitiveness in the beginning, but this is gradually overcome. It is best to delay the massage for a time if there is much tenderness.

Active motion of the joints more distant from the fracture should be encouraged fairly early and if the patient is slow to cooperate passive motion should not be delayed.

Passive motion of the joints nearest the fracture should be done very cautiously by the physician as early as it is safe to do so; that is, as soon as the fractured member can be handled without fear of displacing the fragments. Care should be taken that the limb is properly supported during the treatment. Only one or two movements need be gone through in the beginning, about every second day, and they can gradually be increased in number at each sitting, but of course well within the point of fatigue. Active motion at these joints should also be encouraged as early as possible.

When the fracture is in the neighborhood of a joint, great care must be taken that motion is not started too soon, as there is more danger of disturbing the position of the fragments in this location.

If the joint has been contused or sprained at the same time as the fracture has occurred, the condition should be treated by rest; and active and passive motions should be delayed until the inflammatory reaction has subsided.

In those cases of injuries to joints where the best possible result that can be expected is bony ankylosis, the injured member should be placed in the position which will be the most useful one after healing has occurred.

Many cases of deformity following fractures of the lower extremity. when all possible care has been taken to obtain and maintain proper reduction and alignment of the fragments are caused by permitting weight bearing at too early a period or without proper support. The greatest care should be taken to delay weight bearing until union has taken place to such an extent that the increased strain which takes place at the site of the fracture during weight bearing will cause no movement of the fragments or any change in their alignment.

Preliminary to weight bearing graduated active movements and resisted movements of the injured extremity should be done under careful supervision. During these movements the physician can determine the stability at the site of the fracture. If it is seen that the union is not firm enough to permit weight bearing these exercises can be cautiously continued with proper support of the limb, in order to stimulate the healing process. These exercises are especially indicated when the healing process is delayed. If the healing process is taking a normal course these exercises should not be begun too early but just as a preliminary test and preparation for weight bearing.

Proper support of the injured part should be continued until there is no doubt whatever concerning the stability of the union. There should always be an intermediate period between that of immobilization without weight bearing and weight bearing free from any external support. During this period weight bearing with support is permitted and the patient is observed at frequent intervals to see that there are no signs of undue strain at the site of the fracture or elsewhere. If there are any untoward signs, weight bearing is not permitted until either the healing process has progressed or the support has been corrected so that weight bearing is made safe.

During this period the support given by the im-

mobilizing dressing is generally sufficient. The patient is permitted to stand and walk with the cast on, at first with the aid of crutches. If everything progresses well the time of weight bearing is gradually increased and the amount of external support gradually lessened until weight bearing without support is safe.

In those cases where the external support cannot be dispensed with, such as in obese persons, elderly patients, delayed or nonunion, a cast or a brace is worn for a variable period.

CONCLUSION

The preceding statements made concerning fractures of the lower extremity apply similarly to the upper. Early massage of the injured limb, early active and passive motions of the joints more distant from the fracture, later active and passive motions of joints nearest the fracture, and then as the healing process progresses, or to stimulate it, graduated active and resisted movements of the limb preparatory to functioning without any external support.

2827 Valentine Avenue.

Value of Iodine in the Treatment of Scarlet Fever

Results of a Comparative Study of Two Hundred Cases Treated in the Philadelphia Hospital for Contagious Diseases

HARRY J. NOVACK, M.D.
Philadelphia

It seems rather unusual to advocate iodine—an element with irritant properties—as a new remedy in scarlet fever—a disease whose toxin possesses more or less of a destructive action upon the kidneys, skin and other tissues. With the old teachings still ingrained in our minds, it appears like adding insult to injury to favor the use of iodine or any modification of that element as a therapeutic measure in scarlet fever.

However, from clinical study and experience in private practice as well as corroborative evidence in the following hospital report, iodine, or the particular modification that was used, has proved itself of unusual value in the treatment of scarlet fever.

In the Medical Journal and Record of January 17, 1923, I reported the results of six years of observation and study with a modification of iodine called colodine—a ten per cent. colloidal form of iodine. Among several rather unusual indications scarlet fever was included.

It was long noticed that in the acute tonsillar infections, especially where the streptococcic strains of bacteria were predominant, that the drug had a powerful action in combating that infection. When administered early, its action often was abortive in character, while when given later, the reaction limiting the infection frequently caused increased swelling of the tonsils, peritonsillar tissues, and in some cases, tenderness and swelling of the muscles and glands of the neck.

On several occasions contacts with such reacting tonsillar cases subsequently developed definite scarlet fever and it appeared to the author that some of the sore throats treated might be scarlatinal in nature. Further clinical trial in definitely diagnosed cases of scarlet fever proved the drug to be of more than usual value.

When the drug was given at the earliest possible moment of onset—with the appearance of vomiting, redness of the throat, rash and elevation of the temperature and pulse—the result was semiabortive within ten to fourteen hours following intensive medication. All symptoms rapidly subsided, the rash became blanched so that the skin appeared faintly bluish or cold, a mere semblance of what had previously been an active rash.

When medication was begun several days after the onset, the rash fully developed and having existed for a day or two, the action of the drug was somewhat more intensive. A mild reaction took place in which all existing symptoms were temporarily accentuated—the rash appeared more reddened, the glands when already affected became more swollen and the temperature and pulse higher. Following this temporary reaction all symptoms rapidly cleared away resulting in greatly shortening the duration of the disease, protecting the heart and preventing complications.

As a prophylactic, when contacts were given moderate doses scarlet fever never developed during the period of medication, though in some cases a chronic infected throat would react mildly to the drug—a reaction occurring even in an average individual when taking the drug. So repeatedly and uniformly were the above phenomena observed that the belief that iodine was antitoxic and antimicrobic in scarlet fever seemed justifiable and its use was advocated in the first report upon the drug.

The question of kidney irritation was always uppermost but apparently without foundation. Albuminuria following cases of scarlet fever treated without iodine were completely cleared by subsequent iodine medication in a comparatively short time. The scarlet fever toxin is the irritative factor and not the iodine radicle which must be both antitoxic as well as antimicrobic in order to produce such specific action and results.

While the iodine treatment of scarlet fever has proved exceptional in my series of cases (in private practice) throughout a period of over nine years, it was a difficult matter to formulate a concrete detailed or comparative report that would be of scientific value.

On July 25, 1925, with the permission of the director, Dr. S. S. Woody, a control test was started at the Philadelphia Hospital for Contagious Diseases, the results of which were completed on November

28, 1925. The complete report includes "a synopsis" of each of the two hundred cases from which in turn the summaries and tables were compiled. For the sake of brevity, only the summaries, tables and conclusions are herein included.

With the exception of giving the information relative to dose, action and reaction of the drug, I took no part in the hospital corroborative test.

Prior to beginning the test at the hospital and in order to be definitely certain that no untoward effects might result to the little patients, I personally took four and one half ounces of the iodine preparation "at one dose" and this, without having previously taken any of the preparation in order to raise tolerance. (The equivalent is more than six ounces of the tincture of iodine or two hundred and sixteen grains of elementary iodine.) The results were a feeling of fullness in the head, a metallic taste in the mouth, flushed skin, slightly increased pulse and respiration, and frequent urination, followed within sixteen hours by two loose bowel movements with normal general condition within twenty-four hours. For several days after, the urine responded to the tests for iodine, but not the slightest semblance of kidney irritation, albuminuria or other untoward effects. With the toxicity and kidney irritation factors eliminated or within a wide margin of safety, the test was carried out at the hospital and the essence of the report is given below.

The cases recorded in this report were all definitely diagnosed and the more severe types were selected for colodine treatment. Standard doses were adopted without consideration of age and only slight modifications were made at different stages of the disease.

The aim was to get rapid saturation with the drug and then to taper off gradually as the acute symptoms subsided. However, in order to determine the action and value of the drug at different stages of the disease, colodine was administered beginning at various periods from day of admission and at times in different doses.

By the term full colodine medication is meant as follows: First day one dram every fifteen minutes to one hour (eight doses); second day one dram every hour to two hours (eight doses); third day one dram every two to three hours (eight doses); fourth day one dram q. i. d.; fifth day one dram t. i. d.; sixth day one dram b. i. d.; seventh day one dram or one half dram b. i. d. till end.

This scheme of dosing was carried out in the fourteen months old patient as well as the adult, with slight variations at times.

All complications listed in the following report such as otitis, adenitis, and mastoiditis were not recorded unless they were suppurative in character.

The data in the accompanying tables show in detail the results of this comparative test.

CONCLUSIONS ON THE ACTION AND THERAPEUTIC VALUE OF COLODINE IN SCARLET FEVER

The unusually small number of complications and their mild character, together with the total absence of house infections in the cases treated with full colodine medication fairly early, can be explained only by the fact that the drug increases the resistance and stimulates the fighting powers of the body against the infection.

TABLE I.—SUMMARY OF ONE HUNDRED CASES OF SCARLET FEVER TREATED WITHOUT COLODINE (CONTROL).

100 cases admitted from April 3, 1925, to November 8, 1925, inclusive

Mild	74 cases	Average time in hospital per case: 53 8/9 days (not including 4 that died).
Moderate	14 "	
Severe	12 "	

Complications—47

Otitis	22
Nephritis	3
Febrile albuminuria	1
Adenitis	3
Mastoiditis	9
Bronchopneumonia	1
Lobar pneumonia	2
Empyema	1
Retropharyngeal abscess	1
Axillary abscess	1
Myocarditis and endocarditis	1
Arrhythmia and slight murmur	1
Other complication	1

House infections—10.

Measles	7
Pertussis	1
Diphtheria	2

Deaths—4.

Totals—

Complications	47
House infections	10
Deaths	4

TABLE II.—SUMMARY OF ONE HUNDRED CASES OF SCARLET FEVER TREATED WITH COLODINE

100 cases admitted from May 19, 1925, to October 16, 1925 inclusive

Mild	32 cases	Average time in hospital per case: 53½ days (not including one patient who died).
Moderate	45 "	
Severe	23 "	

Complications:
Before medication—40.

Otitis	25
Adenitis	8
Mastoiditis	4
Bronchitis	1
Impetigo contagiosa	1
Facial palsy (before operation)	1

During medication—6

Otitis	5
Peritracheal abscess	1

After medication—9

Otitis	3
Adenitis	1
Nephritis	3
Mastoiditis	1
Bronchopneumonia	1

House infections:
Before medication—6.

Diphtheria	2
Measles	3
Pertussis	1

During medication—0.

After medication—2.

Diphtheria—2.

Deaths—1.

Totals

Complications:

Before and after medication	49
During medication	6

Total house infections:

Before and after medication	8
During medication	0

Deaths 1

TABLE III.—SUMMARY OF THE SIXTY-NINE CASES TREATED WITH FULL COLODINE DOSES BEGINNING FROM THE FIRST AND NOT LATER THAN THE SIXTH DAY AFTER ADMISSION TO THE HOSPITAL

Mild—26 cases.

Average number of days in hospital per case—42 days.

Complications:

During medication	0
After medication	0

House infections:

During medication	0
After medication	0

Moderate—31 cases.

Average number of days in hospital per case—47 7/10 days.

House infections:

During medication	0
After medication	1

C409 (14 days after) diphtheria.

Complications:

During medication	0
After medication	5

C388 (17 days after) Broncho Pneumonia, R. & L. otorrhea (lasting 6 days).
C334 (5 days after) R. otitis (lasting 11 days).
C414 (14 days after) nephritis.

Severe—12 cases.

Average number of days in hospital per case—48 days.

House infections:

During medication	0
After medication	0
Deaths	1

Complications:

During medication 4
C359 R. otitis, 9/3 to 9/19.
C357 R. otitis, 8/29 to 9/19.
C370 L. otitis, 9/13 to 9/18.
C410 L. otitis, 8/15 to 11/1.

After medication 2
C406 (16 days after) nephritis.
B365 (11 days after) R. cervical adenitis.

Totals

Total—69 cases.
Mild .....26 cases
Moderate .....31 "
Severe .....12 "

Average time in hospital per case: 45½ days.

Deaths: 1.

Complications:
During colodine medication—4.
Otitis 4

After colodine medication—7.
Nephritis 2
Adenitis 1
Otorrhea 3
Bronchopneumonia 1

House infections:
During Colodine medication—0.
After Colodine medication—1.
Diphtheria 1

TABLE IV.—COMPARATIVE TABLES OF COMPLICATIONS

	Totals								
	Nephritis	*Otitis*	*Adenitis*	*Mastoiditis*	*Other Complications*	*House Infections*	*Complications*	*House Infections*	*Deaths*
100 cases Scarlet Fever treated without Colodine	3	22	3	9	10	10	47	10	4
100 cases Scarlet Fever treated with Colodine.									
Before medication	0	25	8	4	3	6	40	6	0
During medication	0	5	0	0	1	0	6	0	0
After medication	3	3	1	1	1	2	9	2	1
Parks, Table 8, Journal A. M. A. Oct. 17, 1925.									
75 cases Scarlet Fever treated without serum	22	20	24	5	20	..	91	..	..
75 cases Scarlet Fever treated with serum	2	17	28	3	11	..	61	..	..
69 cases Scarlet Fever treated with "full Colodine medication" not later than 6 days after admission to hospital.									
Before medication	0	4	0	0	0	0	4	0	0
After medication	2	3	1	0	1	1	7	1	1
Parks: 75 cases treated with serum	2	17	28	3	11	..	61	..	..
69 cases "full Colodine treatment."									
During medication	0	4	0	0	0	0	4	..	..

Since no toxic phenomena were noticed by any of the medical staff at any time during or following the administration of the drug, and in view of the large doses employed (one fluid ounce daily for three or four days in succession), colodine appears to be non-toxic.

In spite of the fact that massive doses of iodine or its compounds are contraindicated in diseases with a tendency to kidney irritation, no kidney complication of any kind was caused by the administration of full doses of colodine. In fact, cases showing signs of kidney irritation before the drug was given cleared up rapidly and completely under the colodine.

Colodine did not show any special effect upon the heart except that of mild stimulation. Patients under colodine seemed to tolerate their condition much better, and appeared much brighter and less toxic.

As far as reactions are concerned colodine started on the first day of admission in fairly early cases, produced a mild reaction—slight accentuation of the rash, higher elevation of temperature and only moderately increased enlargement of tonsils, cervicals and sometimes other glands—all of which subsided within a few days. Continuation of moderate doses cleared the case without any subsequent return of symptoms.

Colodine started later when complications are already in evidence—bull neck, large tonsils, etc., with no elevated temperature but generally low fighting power—produces a rather abrupt, powerful reaction, greatly accentuating every existing symptom. The bull neck or other glands affected become enormously enlarged and hard, continuing to increase in size and hardness to an unusual degree. The temperature suddenly shoots up and the entire picture is changed from a dormant nonreacting condition to one of extreme acuteness. However, with gradual reduction in the doses after a few days of intensive medication, all symptoms gradually subside, and it is remarkable that such enormously enlarged glands rarely go to the point of suppuration. When there is already formed a suppurating point in the gland, a similar marked reaction occurs resulting in a great increase in swelling and hardness, but with reduction of medication all swelling is resolved, leaving only a fluctuating area. When this area is incised and the pus evacuated, healing takes place in a much shorter time than usual, especially if moderate medication (one dram t. i. d. or b. i. d.) is continued. It seems as if the infectious bacteria in the tissues involved are suddenly attacked by the iodine laden body fluids resulting in an immediate response and that all the bacteria floating in the blood stream are entrapped within the enlarged glands and are either rapidly destroyed or result in a sort of fixation abscess, a desired feature in scarlet fever since it is a streptococcal infection.

An analysis of the above report clearly shows the value of iodine in the treatment of scarlet fever. Not one but all factors are favorably influenced to a degree not as yet attained by any other form of treatment.

	Urine	*Showing albumin, casts or both*	
100 cases Control	Mild .....74 cases	7 cases	9.5%
	Moderate ....14 "	6 "	43. %
	Severe .....12 "	3 "	25. %
Iodine treated 100 cases	Mild .....32 "	2 "	6.2%
	Moderate ....45 "	7 "	12.6%
	Severe .....23 "	5 "	21.7%

DURATION

The duration or hospital stay has been greatly shortened especially in the early iodine treated series. The average short period a scarlet fever case is kept in this hospital is about five weeks, irrespective of its mildness, therefore the greatest difference is noticeable in the moderate and severe types of cases.

	Average time in Hospital:	Shortened by:
Control 100 cases	Mild ..... 43 2/3 days	
	Moderate ..... 76 "	
	Severe .....109 5/8 "	
Iodine treated 100 cases	Mild ..... 43 "	2/3 days
	Moderate ..... 54 2/5 "	21 3/5 "
	Severe ..... 69 "	40 5/8 "
Early iodine treated 69 cases	Mild ..... 42 "	1 2/3 "
	Moderate ..... 47 7/10 "	28 3/10 "
	Severe ..... 48 "	61 5/8 "

COMPLICATIONS

In both the control and iodine treated series no complications occurred in any of the mild cases. The tables below are based only on the moderate and severe types of cases.

1. Control 26 cases	Complications 47	.....180.7%	
2. Early and late iodine treated 68 cases	Total complications 55	.....	80.9%
	During medication only.... 6	.....	9. %
3. Early iodine treated 43 cases	Total complications 11	.....	28. %
	During medication only.... 4	.....	9.3%

Table II shows a high percentage of total complications because this series recorded forty complications before the iodine treatment was begun. Most of the late iodine treated cases were started just as a complication threatened or had already appeared, in order to determine the preventive or abortive power of the drug. In other instances it was used to hasten clearing of a long existing complication.

Excluding the complications that existed before medication was started and those that occurred after it was stopped, the actual decrease is from 180.7 per cent. to 9 or 9.3 per cent. It is generally known that within five days after iodine medication is discontinued almost all of the drug is eliminated from the body no matter during how long a period it has previously been taken. It is therefore reasonable to deduct or exclude complications occurring after the five day period.

With intensive medication started earlier (as is possible in private practice) and continued longer after the acute symptoms have subsided and the average complication period passed, the 9.3 per cent. complications would be greatly lowered, a result not as yet shown by any other form of treatment.

In view of the evidence contained in this report I believe that colodine is deserving of a high place in the specific treatment of scarlet fever and may or may not be combined with the serum in severe cases.

In carrying out this work I wish to express my appreciation to the medical director of the hospital, Dr. S. S. Woody, and to his first assistant, Dr. H. Tucker, who gave me the opportunity to conduct this work, as well as to Dr. Hirata, Dr. McLaughlin, Dr. Noyes, Dr. Conaway, and Dr. MacMurray for their kind assistance.

2415 North Fifty-fourth Street.

Neurasthenia and Allied Neuroses: Symptoms or Diseases?

The Value of Neurocirculatory Tests

HAROLD WALGROVE WRIGHT, M.D.

Foxboro, Mass.

There are few, if any, symptom complexes more difficult of understanding completely and feeling sure of as to cause and pathological sequence than the symptom complex which we, either in despair or impatience, are apt to label with the socalled term neurasthenia or a neurosis.

Granting that perhaps the majority of people who present the neurasthenic or the anxiety syndrome in the absence of any obvious disease, are constitutionally and primarily inferior in their physical, and hence their nervous or personality makeup, they have nevertheless got on fairly well with themselves as they are, and have kept away from the doctors until some additional stress of either a physical or psychological sort has produced feelings and incapacities which bring them to us. There has been some point of departure from their average.

Let us consider what this point of departure may be due to; on what level of functional activity and in what category of pathology has the divergence from normal health occurred?

For convenience we may classify causes and hence pathological condition into:

1. Definite physical disease entities producing a variety of symptoms of the neurasthenic or neurotic type.

2. Habit factors or physiological causes: in respect to mode of life—eating, sleeping, working, drinking, smoking, playing or not playing at all.

3. Psychological causes: The personal situation in life, e. g., marital, troublesome home affairs, unsatisfied affections, a distasteful occupation, an uncongenial social environment, lack of friends to unburden oneself to.

4. Early stages of definite psychoses—general paralysis, manic depressive, schizophrenic, involutional psychoses.

All of these and more can produce what is commonly called nervousness. Indeed about all that the patient in many instances volunteers, in speaking of his symptoms, is the word "nervous."

So we are obliged to get first of all a good history. This means a history which shall embrace the whole individual considered as a unit composed of physical, environmental and psychological components. This means that we must get an account of all past illnesses, their symptoms and their results; also a history of the personality in his reaction to his past and present environment, his past and present difficulties of an industrial, domestic and intimately personal sort. The method of getting such information must be an orderly biographical one and, naturally, we must know what to ask about, while at the same time we keep our minds free from any preconceived theories as to the cause of nervous symptoms.

We must know what to ask questions about. But it is easy to overlook something unless we have a definite scheme or at least have a few outstanding subjects or items that are covered in every such interview. The same remark applies to the physical examination which follows, by which we aim to elucidate special symptoms complained of, either by exclusion or positive findings.

As history taking proceeds many symptoms other than the socalled nervous will be brought out. For instance, we will be told that the heart palpitates, the bowels are constipated, there is pain around the heart, feelings of faintness with or without exertion, flatulence, insomnia, night sweats, inability to eat the average meal, feelings of vague fear as if something awful was about to happen; feeling of being tired all the time, especially in the morning and in spite of enough sleep; unpleasant dreams; tinglings and achings in the limbs, inability to make decisions, special phobias, and other conditions.

What definite items in the history and the physical

examination under the first heading of physical causes should be especially covered? Tuberculosis comes first to mind because many people previously diagnosed as neurasthenic turn out to be tuberculous. Malaria also must be considered. Disorders of the thyroid such as mild or masked hyperthyroidism and hypothyroidism; focal infections of tonsils, teeth, sinuses, which so often produce neurocirculatory defects and hence the syndrome of fatigue and palpitation and a generally socalled run down state, or a mild hyperthyroidism. Nephritis with hypertension or sometimes with a low blood pressure and secondary anemia can give the same syndrome. Syphilis, particularly cerebrospinal syphilis, may be entirely responsible. Pernicious anemia also comes in for consideration when paresthesias and fatigue and vague digestive disturbances are complained of. Intestinal amebiasis is productive of a train of symptoms of a neurasthenic nature.

In the second category of possible causative factors, i. e., the habits and mode of life, we should bear in mind the fact that many people are living at high pressure; not because they need to but from habit only. People easily get the hurry habit and this habit involves all their activities. In other words, they have either never acquired or else have lost a normal degree of poise and deliberation. They do not know how to relax. They may have social or other ambitions far beyond their capacities and be in a hurry to fulfill them. Such a state leads to fatigue and unrest and the desire for artificial aids and hence they may smoke or drink coffee and alcohol to excess. What such people need is to have somebody point out to them the ridiculousness of their mode of life and show them how they can live and work to better advantage. A little philosophical reading, and saving some part of the day for quiet thinking and for being alone is often indicated.

With respect to sexual habits as productive of neuroses a word should be said about the relation of frequently aroused but incompletely gratified sexual desires. An anxiety type of neurosis in which vagotonic symptoms such as globus, pylorospasm, spastic colon, palpitation and sweating, general uneasiness and as time goes on a vague fearfulness, can all be the result of either coitus interruptus or, in the case of unmarried people, of frequent social contacts without complete physical relations. Such symptoms are apt to become chronic and last even after the cause is removed if the cause has been operating frequently in the past.

There may be an intricate psychological mechanism back of any neurosis and much time is necessary to bring it into light. It is not possible to cover this phase of the subject in this paper. But there are certain specific psychogenetic symptoms which stand out as guide posts when taking a history and after a physical examination has excluded reasonable physical causes. Of these specific symptoms, I would first mention fear. The fear may be just vague fear of nothing or, by further analysis we may find it is a fear of some particular thing or of doing some particular thing, e. g., fear of going out on the street, of riding in elevators or ferry boats or trains. In my experience fear, either vague and general or specific fear, is most often simply a symbol of indecision about something of personal import to the patient's immediate future or present situation. The fear of being alone, for example, is often due to the fact that when alone the matter that the patient is undecided about keeps recurring to mind again and again, and this is relieved or prevented by being distracted in the presence of others, but of course not cured thereby. The fear of going out or of getting on a ferry boat or train or elevator may, to be sure, be the result of some previous experience of a fearful nature in respect to ferry boats or trains or street cars and so be simply the result of suggestion; but we must not overlook the fact that there are and have been such fears without such causes, and that when these cases have been thoroughly analyzed we have found that the fear was a defensive and compensating symbol. In other words, the patient had a more obscure but still very definite reason for not wanting to take the customary boat or train or to go out at all; and, rather than admit to himself or herself that they did not wish to go on playing the game, they have fooled themselves into believing that they were afraid of taking the steps that were necessary to bring them again into the place where work or some other social contact had become unpleasant and distasteful to them because of some particular experience there. Such fears are properly called hysterical.

With regard to the vague general feeling of fear, I would repeat that this is likely to be due to being in a state of indecision regarding making some definite change in life, such as a change of employment and location. There is a desire to make the change and also a desire for other reasons not to make it. The choice is free either way and the responsibility for making a choice is entirely up to the patient. If it were not there would be no indecision and hence no fear. After weighing matters pro and con for days or weeks, such a patient becomes fatigued, sleeps poorly, loses appetite and digestive powers, suffers from feelings of pressure in the head and indeed may have an increase of blood pressure, which is not surprising when we recall that disturbing and fearful emotions produce excessive action of the vagus and the sympathetic nerves and the endocrine glands.

Such conditions may be the result of indecision of character to begin with, I grant, but even so, the illness which occurs from indecision is not present so long as the individual moves along in the same rut or routine of life as hitherto; for it is only the indecision about matters of real importance to their careers that produce serious symptoms in indecisive characters. In such cases the physician or someone else may have to do the deciding for the patient. At any rate, it is interesting to note that as soon as a decision is made and acted on, all the distressing symptoms disappear as if by magic. I have seen this happen time and time again. There may be left over a "crying over spilt milk" sort of syndrome with reactionary depression, no matter how the decision is made; but this is temporary and far easier to endure than the anxious, restless state that accompanied the stage of indecision. For after all, things do work out somehow and somewhat to our satisfaction providing we make some definite step.

The early stage of any psychosis of a chronic type may be manifested by symptoms of a neurasthenic, simple depressive, or anxiety neurosis type. This is particularly true of the early stage of manic depres-

sive psychosis, dementia precox and general paralysis. In addition to the fatigue syndrome in the early stage of a manic depressive psychosis a little questioning will bring out a more marked degree of anhedonia or general distaste for all customary interests, a feeling that nothing is worth while, a loss of enthusiasm and interest in any form of pleasure, an indifference of the affections toward relatives without any specific cause; this sort of mood may be alternate with a short period of mild overactivity and brief elation or euphoria, sleep being less than normal. Such alternate moods may exist for many months before the psychosis becomes acute.

In the early stage of dementia paralytica a mild depression combined with anxious, restless feelings, without any delusions or extravagant behavior and with a certain amount of dulling of mental activity, manifested by absent mindedness, attention disorder and lowering of the esthetic or moral sense quite foreign to the patient's nature may be the only symptoms for a long time. However, it is not unusual to note that in this early stage the speech is somewhat affected. This can be easily overlooked unless definite test phrases are given and the slight slurring and tremor listened for in the replies. The handwriting may show occasional omissions of letters and punctuations. All of these symptoms may exist before any change is found in the pupillary reactions or other reflexes.

In the hebephrenic type of dementia precox, an early diagnosis from neurasthenia or psychasthenia is sometimes impossible. However, in hebephrenia there occurs before long a change in the patient's appreciation of his responsibility toward others, a loss of conscientiousness, an inability to put up with the ordinary difficulties of most jobs, a flitting from one position to another as soon as any difficulties arise, in entire disregard for obligations incurred. Later, as the psychosis progresses, all work or attempts at work are given up and the patient withdraws into himself to live with his phantasies or daydreams. Before this occurred, he had been as open a personality, as accessible to interview and apparently as sane as the "neurasthenic." In both the sane neurasthenic and in the hebephrenic, there will be found the cold, clammy and cyanosed extremities, the exaggerated reflexes, the visceroptotic habitus and other signs of constitutional inferiority; so a physical and neurological examination does not help us in differential diagnosis. Time alone may tell the true story; but a careful history dealing with the whole course of the disorder and with the biography of the patient can be quite helpful. For example, in ordinary neurasthenia which is not due to any other disease entity such a history is apt to reveal that one patient has always been more or less asthenic, while another who is developing dementia precox has been up to the average in health and efficiency until recently.

Have we any way of distinguishing a true asthenia of the nervous system from an imaginary fatigue or from a malingering of the fatigue syndrome? This becomes an important question in dealing with industrial insurance cases, government pensioners and post-traumatic cases.

Let us suppose in a given case that the physical history and the physical examination have failed to reveal any reasonable causes for the complaint of fatigue and inability to do the customary day's work, that the psychological aspect of the individual is negative and that no environmental causes of an emotionally disturbing sort have been found. Can we go any further in the objective examination before saying that there is nothing the matter?

In the United States Army a great deal of research has been done on the effects of aviation upon a selected group of normal men, as well as on the suitability of recruits for the aviation corps. Aviation, particularly in time of war, is a nervous stress of an exceptional type. Not only must the apparatus of equilibration be perfect, but the circulatory system must be at all times efficient. In connection with the latter system, I would point out that the efficiency of the circulation of the blood and the response of the nervous system to the variable demands upon the circulation, the two being inseparable, comprises all that we call physical efficiency. In the last analysis, normal neurocirculatory function spells normal efficiency, at least so far as physical effort is concerned; and we might add that the same is true of mental efficiency in accord with the degree of mental development. All cells are dependent upon the reception of a healthy blood supply and an excretion through the blood of their waste products for normal health of those cells; and back of all this is the great complicated nervous system which is the main spring of everything else and through which all metabolism and secretory and motor functions are performed.

The need of a measure for physical efficiency whereby degrees of fatigue, physical fitness, and health may be determined has been felt alike by the medical profession, physical educators and school hygienists, and when we are dealing with those who may be either malingering or who only fancy themselves ill, the need is still greater.

The tests to be discussed have little to do with functional heart measurements, although they point out, when analyzed separately, some of the factors pertaining to functional efficiency of the heart. But they are measurements particularly of the efficiency of the nervous system and particularly the vasomotor and sympathetic nerves.

It is well known that the pulse rate is an indication of health, and that the rate is slower in well trained vigorous men trained for muscular work. It is also a matter of agreement among physiologists that the rate of the pulse according to the posture of an individual has significance. Meylan, a physical educator of large experience, has concluded that a pulse rate of forty to eighty in the horizontal position and a rate of fifty to ninety in the standing posture are favorable signs.

All available evidence indicates that with improvement in physical fitness, the heart beats less frequently and more efficiently, and it follows that the pulse rates in the reclining and standing postures may give useful hints about the degree of fitness and health. A change in rate from the average may not be shown in both postures, but only after assuming the standing posture. The increase of rate in the standing posture as compared to the reclining posture has been found a useful index of fitness.

It is also well known that the pulse rate after exercise is comparatively slower in a healthy and well trained man than in an untrained person. A widely recognized and used test is the time required for a

pulse rate to return after exercise to its previous rate.

The arterial pressure at rest offers little information of value as to the condition of a young person free from hypertension, and various investigators have found that the degree of training of an athlete has little effect upon the reclining blood pressure.

The hydrostatic effects of posture and the manner in which the splanchnic vasomotor mechanism compensates for this is well known. When a person changes from the reclining to the standing position, the splanchnic vasomotor tone overcompensates the effects of gravity. In normal subjects, the systolic pressure is about ten millimetres higher in the standing posture. That the systolic blood pressure falls on assuming standing posture in individuals weakened by disease, overwork, dissipation and lack of sleep has been recognized by Crampton. He demonstrated that a subject when standing might show weakness by a decrease in the systolic blood pressure or by a large increase in the pulse rate.

TABLE I.

POINTS FOR GRADING CARDIOVASCULAR CHANGES

A. *Reclining pulse rate*

Rate	*Points*
50- 60	3
61- 70	3
71- 80	2
81- 90	1
91-100	0
101-110	—1

B. *Pulse rate increase on standing*

0-10 *beats, points*	11-18 *beats, points*	19-26 *beats, points*	27-34 *beats, points*	35-42 *beats, points*
3	3	2	1	0
3	2	1	0	—1
3	2	0	—1	—2
2	1	—1	—2	—3
1	0	—2	—3	—3
0	—1	—3	—3	—3

C. *Standing pulse rate*

Rate	*Points*
60- 70	3
71- 80	3
81- 90	2
91-100	1
101-110	1
111-120	0
121-130	0
131-140	—1

D. *Pulse rate increase immediately after exercise*

0-10 *beats, points*	11-20 *beats, points*	21-30 *beats, points*	31-40 *beats, points*	41-50 *beats, points*
3	3	2	1	0
3	2	1	0	0
3	2	1	0	—1
2	1	0	—1	—2
1	0	—1	—2	—3
1	1	—1	—2	—3
0	1	—2	—3	—3
0	0	—2	—3	—3
—1	0	—3	—3	—3

E. Return of pulse rate to standing normal after exercise.

Seconds	*Points*
0-30	3
31-60	2
61-90	1
91-120	0
After 120: 2-10 beats above normal	—1
After 120: 11-30 beats above normal	—2

F. Systolic pressure, standing, compared with reclining.

Change in MM.	*Points*
Rise of 8 or more	3
Rise of 2-7	2
No rise	1
Fall of 2-5	0
Fall of 6 or more	—1

Normal Score: 10-18

According to the method of Schneider referred to above, the patient should recline on a couch for five minutes and get well relaxed. The pulse rate is then counted for a full minute and recorded. The systolic blood pressure is then recorded. The patient should then stand upright for two minutes and the pulse then counted for a full minute. If the pulse varies during quarters of a minute its rate when the same for two quarters should be recorded as the rate per minute. The blood pressure in the systolic phase should then be recorded. The patient is then told and shown how to step upon a chair about eighteen inches from the ground and down again five times in fifteen seconds, and at the end of the fifteen seconds of exercise the pulse rate is recorded. The pulse is again counted after thirty seconds from the time the exercise was finished, and if it has returned to the previous standing rate, the test is finished, otherwise the pulse rate is counted at the end of sixty, ninety and one hundred and twenty seconds. If still above the previous standing rate, the number of beats above this rate at this time is recorded. The score is then figured out from the table. A score of nine or below is considered abnormal by Schneider, because in every such instance he found that there was something definitely wrong with the patient, either focal infection or other debilitating disease, or fatigue.

There follows a brief summary of scores obtained in this test. While the results in these cases are in some instances not what might be expected, in other instances the results are quite consistent with what has been said about the adequacy of the neuro-circulatory function as an index of good health.

Thirty-one men were tested. All of these were referred because of some symptoms thought to be associated with functional derangement of the nervous system. The prevailing complaint was fatigue.

Fourteen of these patients had a negative physical status. Eight had significant focal infections. Two had had the operation of thyroidectomy. One had a secondary anemia. Two had had fractured skulls. Three were constitutionally inferior in physique to a marked degree. One had valvular heart disease.

1. In the fourteen cases with no physical findings there were ten with normal scores and four with scores below normal; of the latter one had had mumps complicated by bilateral orchitis, one was working both day and night, one was without apparent etiology and one had had influenza.

2. Of the postoperative hyperthyroid conditions, one had a score of 5, the other was normal and felt perfectly well while taking thyroid extract.

3. Of the eight cases with focal infections, five had subnormal scores, one as low as 1, two as low as 3, one 7, one 9. Three had normal scores.

4. The one case of secondary anemia which followed influenza had a subnormal score of 5.

5. Of the two cases of intracranial trauma following head injury one had a score of 9, the other a score of 3—both subnormal.

6. Of the constitutionally inferior cases, one just passed, the other two were subnormal.

7. The one case of valvular heart disease had a subnormal score of 7.

Total number of subnormal scores 16, total normal scores 15 of which ten would have been expected, and five are not explained.

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Neurosis and Total Personality*

FRANZ ALEXANDER, M.D.

Berlin

(*Concluded from page* 210)

The repressed pushes itself powerfully in its original form because the pressure is over great and because the efficacy—one may say—takes away the moral appearance of the inhibiting agency because of the suffering which it causes. One may also express it thus—that the mentality, the judicial spirit, with which the guilt conflict is freed is the foundation of the neurosis. In the sentence that the guilt is destructible by punishment, by suffering, is contained the nucleus of the entire neurosis doctrine. Through selfpunishment, through suffering, the neurotic soul acquires the possibility of holding fast to the objects given up by the ego, yes, to the pregenital aggressive fundamental position. Every such regression into the sadistic leads then to an inculcation of the sense of guilt, which demands new suffering and so the neurosis formation makes always greater advances with a mechanism similar to that of an uncompensated heart lesion. This also explains why the neurotic patient clings so tenaciously to this autonomy of internal legislation and consummation of punishment.

In this spirit of its conscience it can hold fast to the primitively condemned tendencies, it takes the punishment, the suffering on itself and needs to retain that for which it feels guilty.

Hence the analytical cure is not closed when the subject becomes conscious of his repressed content. The patient must also renounce his requirement for punishment, must give up the primitive spirit of his inner court of justice. So long as the mechanism of payment of his guilt functions through suffering, the way to new symptom formation is still open, however extensive the sense of the individual symptoms may be uncovered. Not only the content sense but the sense of the symptom formation must become known.

Recovery from a neurosis therefore signifies a radical alteration of the spirit in the inner régime of the personality. So long as feelings of guilt may be freed by selfinflicted punishment or through punishment in general and the suffered punishment, often however masochistically pleasurable suffering, justified to the formation of new symptoms, the basis of the neurosis is at hand. Symptoms do not become cured but the neurotic spirit in its total psychic housekeeping; which is comparable with that of the tutor, who believes it sufficient to decree a penalty of his pedagogic duties. As we know the origin of the superego from the period of education, it lies near to bringing not only the education but also our present day punishment justice into an original association. The relations presented between the parts of the psychic apparatus when laid bare allow themselves to be formulated as a pure economic code. Such a formulation will certainly be welcome to those who from a certain piety, follow the material way of thinking in which we are all brought up, with surprise at such a far going psychological reconstruction of the personification of the psychic constituents. Before all we must modify our old tried dynamic sentence, in its nature still valid, that the psychic processes are compromise performances between ego righteous and ego foreign impulsive tendencies, to this extent that we substitute superego righteous for ego righteous; whereby account must be taken of the unconsciousness of the actual moral requirements, to the unconsciousness of the repression. We assume here two great unconscious centres of force in the psychic apparatus, the energy of direction of which is opposed; the impulsive, pressing according to the motility—the centrifugal tendencies of the it and the centripetal inhibitory tendencies of the repressing agency with moral and masochistic content. This second centre of force may be comprehended as the continuation of the moral pressure of society in the interior of the ego, as a phenomenon of adaptation to selfmade culture. Every process in the interior of the apparatus is subjected to both manifestations of force. And now we see that in the neurosis no stationary equilibrium exists, but simultaneously or alternately both a strengthening of the centripetal pressure—meaning the overmorality of the neurotic—as also as a reaction to the strengthening of the centrifugal tendencies of it, which comes to expression as a return of the repressed. And conversely we see also the reciprocal process as the eruption of the repressed again effects a reactive intensification of the punishment tendency. One may also express this phenomenon thus: that in the healthy from the mixture of both of these directions of energy a third, qualitatively new, tendency forms itself, which we term sublimation, that is, a domesticated impulse with action directed externally; with the neurotically diseased subject on the other hand the original unmodified tendencies remain side by side, on the one hand with crude masochistic and on the other with primitive and ego foreign content, which reciprocally consume each other in their endless to and fro swinging. The result—the neutrality of the neurotic externally.

This presentation leads to a revision of our ideas on symptom formation. Our previous conception was this, that the symbolic or other disguise of the hidden sense sufficed to explain the symptom formation. We see now that there is necessary another important factor, namely, the weakening of the agency of repression which I have sought to present to you today. The nature of this weakening consists of the fact that the superego sacrifices the efficacy of its performance of repression through the shallow punishment system with which it has substituted its impulse regulating and repressing task. With the decreeing of punishment it has fulfilled its duty and may now close its eyes to the pressure of the it. If we are serious as to the unconscious char-

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acter of the repression it must at once be apparent that the disguise of the latent sense cannot suffice to account for the symptom formation. The disguise of the sense is of importance only for consciousness and serves to protect the condemned tendency from the denial of the conscience ego. For the unconscious censure, for the actually repressing agency, disguise is without significance. The best proof is that despite disguise of the sense feelings of guilt appear. The repressing agency knows the language of the unconscious and does not allow it to go astray. It demands punishment for wishes which only appear in consciousness disguised. Without the assumption of an unconscious moral agency which has a direct feeling for the unconscious, the unconscious requirement for punishment cannot be explained, and this agency is not to be led astray by mechanisms of disguise, it must be bribed with suffering. An almost experimental proof of this, how great economic significance in the symptom formation the feelings of guilt and selfpunishment possess along with the disguise of the sense, is often furnished by a frequent phenomenon of the treatment, which ought to be known to most psychoanalysts: I mean a sort of transitory negative therapeutic reaction. Then the work of interpretation makes good progress, the sense of the symptom or the transference situation is brought to light in a particularly convincing manner, there often appears —perhaps almost in every case—a period in which the patient apparently applies himself with all remedies against himself, as for example through repeated misbehaviors which could often lead to severe corporeal injuries, or again through occupational errors or even with psychically conditioned organic disease. One gets the impression that if the patient would answer obstinately to our explanations of the ego foreign portion of his person: "I believe it, it is just correct that I am such an abandoned subject, but I punish myself properly for it and you cannot have any further advantage over me."

Inescapably at the close of these considerations a problem forces itself, which hitherto has been treated by psychoanalysis in stepmother like fashion; the problem of health. We are aware that all of our actions are in the last end expressions, even if modified expressions of the it; that all of our sublimations originate in the Œdipus complex and today we see that the repressive instance is not to be deceived over this point. It recognizes the best disguised smuggled ware and exacts a custom duties therefor. How comes it that the sublimations excite no feeling of guilt over the socalled normal actions; that we do not have to pay for these with suffering? Or the question may be formulated from the viewpoint of therapy: How is the alteration in the impulsive life which we, or better the patient's conscience demand of him, how shall the impulsive life be so shaped as to excite no sense of guilt? It is clear that the conscious ego which represents the point of view of reality must be carried through. We have, however, said nothing of the content. You see that this question signifies nothing other than the psychology of morals. Freud has already said the essentials on this subject—that the content of the neuroses will change with the alteration of the moral concepts of society. Hence there is not much to say here of content. The content of the ego righteous alteration of the impulsive life is dependent on the prejudices and convictions, in short of the stages of organization of society, and goes no further than the actual non-psychological problem of therapeutics. Though often there, where the therapeutist arrested in the practical aim ceases to inquire, begins for the naive curiosity of the investigator the most attractive of the problems. Allow me, if not to solve this problem, at least to illuminate it. For the unsublimated impulsive life the answer is easy and known to us all; we ever see again that the attainment of the genital stage, the positive—erotic—relation to the object and indeed to the exogamous object, signifies the freeing from the sense of guilt and the approbation of the deepest unconscious strata of the conscience. Less simply does the question answer itself in the realm of the social relations, of sublimations. Following the incitation of Freud, Sachs has sought, with a valuable sequence of thought, to solve the problem for the art of poetry. According to his comprehension it is the social element which differentiates poetry from phantasy, and it is just this social element, the imparting to others, the overstepping of the limitations of personality, which abolishes the sense of guilt; the fact of the action on others in the positive sense. I believe that this idea has a much more general validity, is not limited to poetry but holds good for every cultural accomplishment, for every sublimation which has a social relationship.

When Rank speaks of a biological sense of guilt which represents the claims of generations I would attribute to the social conscience, which is more readily comprehended psychologically, the task of watching over social behavior and sublimated impulse life, since it harmonizes with erotic relations and reacts on the destructive with feelings of guilt. In the sense in which Abraham speaks of the genital character, we may also speak of a genital stage of social behavior. And in fact we see in the inhibition of production in the artists, how the interest which should count in the work is replaced by other things with greater narcissistic coloring, as competition, prestige, technical hairsplitting, sense of inferiority, etc.; just as the genital coloring of production is obscured by the symptom complex of the father conflict. The social deed silences the sense of guilt and has a similar economic rôle in the healthy as suffering does in the neurotic patient. The neurotic, however, pays with a coin of narcissistic value, with suffering from which he can draw masochistic pleasure; while the socially directed act is a performance of energy which is for the benefit of others. The newly created work upon which territory it is supplied, presents the new life, the creation of Eros, for which the primitive crime is forgiven. I must think here of the motif of Tannhäuser, which recurs in an African novel of the Froebenius collection, in its most original sense. The judge forgives the murderer who had committed incest with the condition that the dry branch with which he had killed—the symbol of the destructive impulse laid bare by Eros —must put forth new twigs. In this judge's law is contained the primitive law of human conscience; the extinguished life can be expiated only through new life. And corresponding to this law the Eros impulse follows the destruction impulse, to mingle with it and make good its destruction.

Practical Therapeutics

A New, Nontoxic Analgesic and Antirheumatic Drug of Definite Value in Vascular Hypertension

EMANUEL W. LIPSCHUTZ, M.D.

Brooklyn

The experiments reported in this communication were conducted for the purpose of determining the pharmacological activity and therapeutic value of a new drug, expuralgin. The plan was to subject this drug to a rigid scientific test by carefully controlled animal experiments and accurate clinical observations.

The toxicity of expuralgin was investigated by means of intramuscular injections in rabbits. Further tests for a possible depressant action were carried out on human subjects. The effect of its use on the uric acid metabolism was carefully investigated. Repeated clinical observations were used to gauge its analgesic effects. Very significant was the influence of expuralgin in vascular hypertension. These topics will be discussed in detail in other sections of this paper.

NATURE OF EXPURALGIN

Expuralgin is a new preparation. Chemically, it is potassium magnesium acetyl citrate.

TOXICITY

In studying the toxicity of expuralgin, four rabbits, weighing five pounds (2488 gm.) each were injected intramuscularly with a sterile solution of the drug in a dose of fifteen mg. per pound of body weight. Injections were made on two occasions, at weekly intervals. The animals were not injured in any way and suffered no apparent toxic symptoms. In terms of body weight, the dose given to the rabbits would be equivalent to a dose of thirty-five grains of expuralgin at a single dose for a man weighing 150 pounds. Therefore, it may be stated that expuralgin failed to evince toxic symptoms in rabbits when given intramuscularly in three and a half times the therapeutic dose by mouth.

TESTS FOR DEPRESSANT ACTION

In this experiment, eleven normal subjects were tested before and after medication with expuralgin, in order to determine whether this drug has any depressant action when given in therapeutic doses. One of the subjects had hypertension but was otherwise normal. The drug was given in doses of ten grains (0.65 gm.) every two hours for six doses. Observations were made before and after medication on the following phases of physiological activity: pulse rate, respiratory rate, systolic and diastolic blood pressure, total leucocyte count, and percentage of polymorphonuclear cells.

The results of these experiments are given in Table I. From a study of the table it will be apparent that expuralgin has but slight effect on the pulse rate, respiration, or blood pressure of the normal subject. It is true that the average figures showed a slight drop for all of these readings, but no more than could be accounted for by pure chance. The difference in the readings before and after medication was too slight to receive any significance. In the one patient with hypertension, there was a pronounced drop in the blood pressure following expuralgin medication. This matter will be discussed in another section of this paper.

With regard to the leucocyte counts, the comparative readings before and after medication showed a marked change. In nine of the eleven cases, the leucocyte count was increased after treatment with expuralgin. The average readings showed a rise from 8820 to 11363 white blood cells after expuralgin medication under the conditions of this experiment, quite a definite increase. The percentage of polymorphonuclear cells was slightly reduced; but in view of the higher total white count, the actual number of these cells was definitely increased.

TABLE I

TESTS FOR DEPRESSANT ACTION

	Before Expuralgin[1]					After Expuralgin				
Number	Pulse	Respiration	Blood pressure	White count	Polys. percent	Pulse	Respiration	Blood pressure	White count	Polys. percent
1	66	24	110/68	8,300	65	67	20	110/72	12,400	59
2	58	28	120/70	6,600	51	58	22	118/78	5,860	46
3	80	24	110/62	9,300	63	74	21	106/60	9,000	59
4	67	18	113/65	11,100	71	64	20	110/62	15,730	65
5	71	28	113/76	7,300	68	70	25	108/68	9,800	73
6	76	22	118/78	9,720	63	67	22	114/80	13,900	60
7	60	20	120/76	7,400	60	59	24	116/62	9,800	62
8	68	20	126/88	12,800	67	62	22	122/88	16,800	63
9	80	30	124/79	10,700	70	72	28	122/64	11,600	62
10	75	34	136/78	8,000	74	74	29	136/78	12,200	71
11	58	24	210/110	5,800	69	62	20	178/100	7,900	66
Average	69	25	127/77	8,820	65	66	23	122/74	11,363	62

[1]Ten grains (0.65 gm.) every two hours for six doses.

This induction of artificial leucocytosis is probably, to some degree, responsible for much of the therapeutic potency of expuralgin in relieving local inflammatory conditions. The fact that local affections are usually favorably influenced by general leucocytosis is well known. Ferguson and Thomas (1) in 1925 showed that artificially induced leucocytosis is remarkably beneficial in a variety of local disturbances, including trachoma, furunculosis, small infected wounds, arthritis, bronchiectasis, acute otitis media, iritis, iridocyclitis, and carbuncle. Their method of induction was by means of injections of mercury salicylate. Elliott (2) in 1925 obtained similar favorable results in the treatment of local infections and also attributed the benefit to the induced leucocytosis. Certain phases of Ferguson's work have been confirmed and amplified by Thomas (3).

It is clear, therefore, that not only the teachings of pathology with reference to the rôle of the white blood cells as phagocytes but also actual clinical results justify the conclusion that artficially induced leucocytosis is of definite value in the treatment of

local inflammatory disturbances. As expuralgin induces leucocytosis, its administration in local inflammatory affections would appear to be indicated for the amelioration of the condition itself as well as the relief of pain.

urine and determinations of acidity and uric acid.

From an examination of Table II, certain facts with reference to the effect of expuralgin on uric acid elimination will become evident. The level of uric acid in the blood was not influenced. While there

TABLE II

EFFECT OF DRUG ON URIC ACID METABOLISM

	Before Expuralgin				*After Expuralgin*				
Diagnosis.	*Blood uric acid mg. per 100 c.c.*	*Urine uric acid mg. per 100 c.c.*	*Total acidity urine in 100 c.c.*	*24 hr. urine in c.c.*	*Blood uric acid mg. per 100 c.c.*	*Urine uric acid mg. per 100 c.c.*	*Total acidity urine in 100 c.c.*	*24 hr. urine in c.c.*	*Increase in urinary output in c.c.*
Normal	3.0	76.0	28°	2250	2.94	80.0	24°	3060	810
Normal	1.4	80.0	40°	1350	1.12	88.8	14°	1920	570
Normal	1.8	100.0	36°	1440	1.66	114.4	30°	1525	85
Arthritis deformans	2.15	40.0	50°	1260	2.1	65.8	30°	1770	510
Rheumatic diathesis	2.09	61.5	45°	1800	2.4	72.24	28°	2450	650
Rheumatic diathesis	2.72	55.0	22°	1980	2.83	80.0	26°	2520	540
Rheumatic diathesis	2.94	47.0	54°	1050	2.89	74.4	74°	1260	110
Rheumatic diathesis	2.64	67.0	46°	1740	2.53	86.1	46°	2250	510

Expuralgin administered: 2 gm. daily for ten days.
Franke-Benedict method for uric acid determinations in urine.
Franke-Hitchcock method for uric acid determinations in blood.

EFFECT ON URIC ACID METABOLISM

In order to ascertain whether expuralgin has any effect on the uric acid metabolism, studies were conducted on eight human subjects. Three were normal subjects; four had the rheumatic diathesis, and one had arthritis deformans. All of the subjects were kept on a purin free diet for ten days, during which

was a slight reduction in six of the eight subjects, it was too slight to be of any importance. The findings with regard to the uric acid elimination in the urine were more definite. In all eight subjects, the uric acid elimination was increased by the drug. This increased output was much more marked in the rheumatic cases and those of arthritis deformans than in the normal subjects.

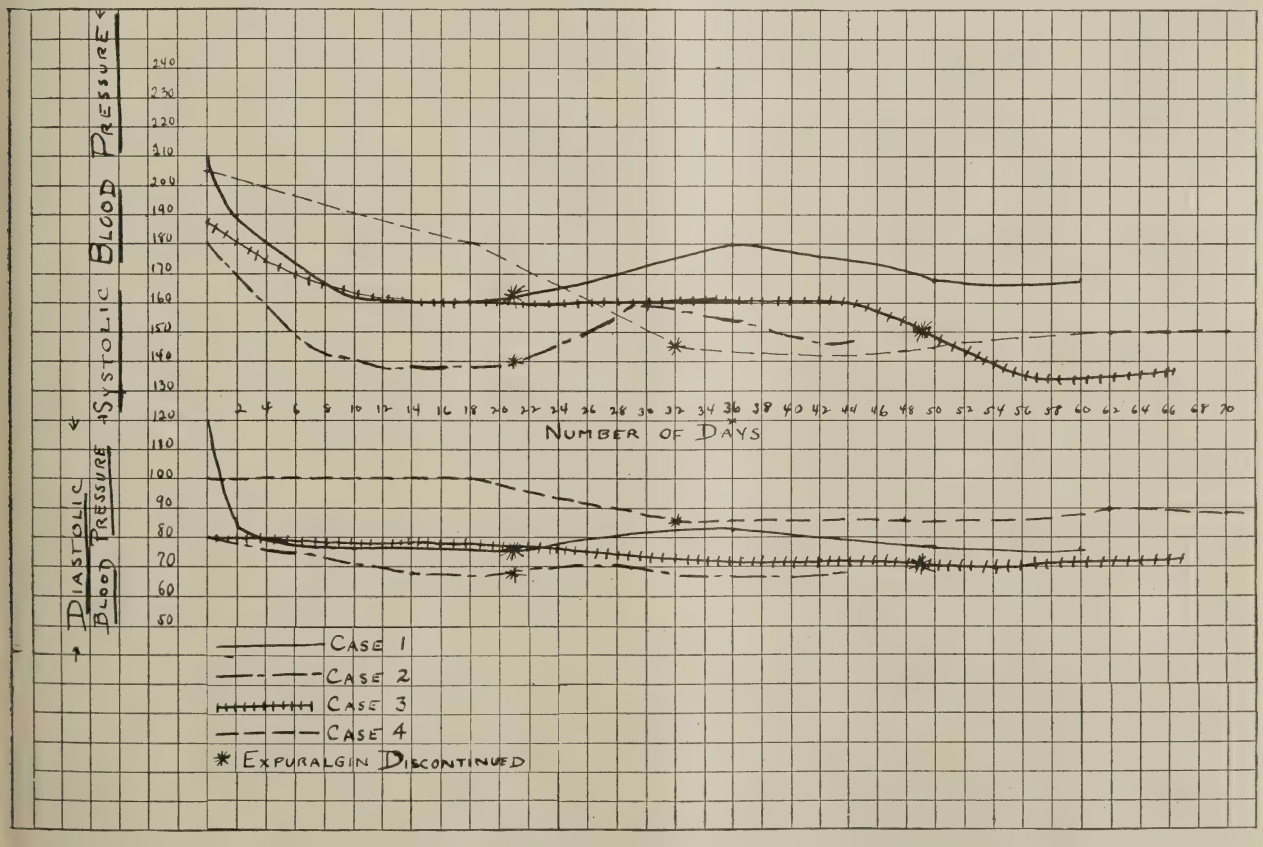

FIG. 1.—Graphic record of four cases of vascular hypertension to show the sustained reduction in systolic and diastolic blood pressure effected by expuralgin medication.

time they received two gm. of expuralgin daily. Uric acid determinations by the Franke-Benedict method were performed before and after the period of medication; also twenty-four hour measurements of the

Usually diuresis did not become apparent until after the second or third day. In general, the effects of expuralgin on diuresis and uric acid elimination in the urine were similar to those observed by Kahn

and Cohn (4) after the administration of allylphenylcinchonin ester (atoquinol). The blood uric acid values were not lowered after the administration of expuralgin as after atoquinol, probably because of the fact that these original values were not so high in my cases as in the series studied by Kahn and Cohn.

Some authors attribute the increased uric acid elimination following the use of atophan and allied drugs to excessive leucocyte destruction. So far as expuralgin is concerned, this hypothesis cannot hold, since the leucocyte count is definitely increased by its administration.

EFFECT ON BLOOD PRESSURE IN HYPERTENSION

The slight fall in blood pressure observed in the eleven normal subjects to whom expuralgin was administered prompted me to investigate the effects of this drug in cases of vascular hypertension. In the four cases studied, the results were striking. In Fig. 1, it will be noted that there was a prompt and prolonged fall in the blood pressure in all four cases after medication with expuralgin. The drug would appear to have a definite vasodilatory action, which persists for some time after its administration has been discontinued. Although the number of cases reported was too few and the period of observation too short to permit of a definite conclusion, the results in the four cases reported were striking and consistent enough to indicate that expuralgin is a valuable remedy for the reduction of high blood pressure.

Patients with hypertension due to arteriosclerosis usually do not respond favorably to expuralgin. Whether the arteriosclerosis is general or localized, the tolerance for the drug is poor. It does not seem to matter whether the localization of the arteriosclerosis is in the brain, heart, kidneys, or elsewhere.

When an arteriosclerotic patient receives a ten grain dose of expuralgin, he begins, within a short period, to suffer from unfavorable symptoms. He complains of slight headache, vertigo, a sensation of warmth throughout the body, and hot flushes. This reaction is so constant that a ten grain dose of expuralgin may be used as a diagnostic test of arteriosclerosis, either general or localized. The normal subject experiences none of these unfavorable effects.

In the cases of hypertension investigated, the effects of expuralgin in reducing high blood pressure other than that due to arteriosclerosis were so favorable that this subject is now being thoroughly investigated. This research will furnish the basis for a further report.

REPORT OF CASES

Thirty-six patients with various painful neuritic, arthritic, and rheumatic afflictions were treated with expuralgin. For convenience of description, these cases have been divided into three groups; namely, thirteen acute cases, ten subacute, and thirteen chronic.

Acute cases.—These cases comprised the following conditions: Three cases of neuritis involving the upper extremities; two cases of lumbago (rheumatic myositis); two cases of facial neuralgia; two cases of sciatica; two cases of sinusitis; one case of myositis of the sternomastoid muscle; and one case of acute rheumatic polytenosynovitis with erythema nodosum.

Medication consisted of ten grains (0.65 gm.) of expuralgin every three hours until acute pain subsided, then eight or ten grains (0.52-0.65 gm.) every four hours until complete and lasting relief was obtained. Liberal amounts of water were taken with the drug. The average amount of the drug taken per patient varied from ten to seventy-five gm. over a period of from three to twenty days.

The results were as follows: There was complete relief of the symptoms with a favorable outcome in nine cases, or sixty-nine per cent.; partial or temporary relief, in three cases, or twenty-three per cent.; and no relief, in one case, or eight per cent. The refractory case was one of sacroiliac disease with sciatica of several years' duration.

Subacute cases.—These cases comprised the following conditions: Four cases of neuritis in various parts of the body; four cases of arthritis involving various joints, and two cases of tenosynovitis (rheumatic).

Medication consisted of ten grains (0.65 gm.) of expuralgin every three or four hours, depending on the severity of the condition; then the dose was reduced to five to eight grains (0.324-0.52 gm.) until the symptoms subsided. The average amount of the drug taken per patient varied from ten to seventy-five gm. over a period of from ten to thirty-five days.

The results were as follows: There was complete relief of the symptoms with a favorable outcome up to the date of this communication (two to three months after the cessation of treatment) in seven cases, or seventy per cent.; temporary relief, lasting only while taking the drug, in three cases, or thirty per cent. All of the patients in the subacute group showed some benefit from the drug.

Chronic cases.—These cases comprised the following conditions: Ten cases of chronic rheumatic diathesis with various rheumatic manifestations lasting from one to six years; two cases of migraine of many years' standing, and one case of arthritis deformans, involving the wrist and fingers of both hands.

Medication consisted of thirty-one grains (two gm.) of expuralgin a day in divided doses. (The dose was different in the two cases of migraine.) When relief was afforded, the dose was diminished in the same manner as in the subacute group, although ten grain (0.65 gm.) doses were required more frequently and over longer periods of time.

The results were as follows: There was complete and permanent relief from all symptoms (four to eight weeks after cessation of treatment) in five of the ten cases of rheumatic diathesis, or fifty per cent. Four of these ten patients, or forty per cent., showed amelioration of the symptoms while taking the drug and for a short period after its discontinuance. In one case, or ten per cent., there was no apparent benefit from the medication. However, in this case there was some question whether the patient took the remedy regularly as directed.

The patient with arthritis deformans was given two gm. of expuralgin daily for a period of seven weeks. She experienced definite relief from her symptoms and showed improved mobility in her fingers.

In the two cases of migraine, the attacks of severe headache were controlled or arrested by expuralgin in doses of ten to twenty grains (0.65-1.3 gm.). In both cases, the intervals between the attacks were lengthened.

(*To be continued*)

Symposium on Gastroenterology

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The Treatment of Gastric and Duodenal Ulcers*

MAX EINHORN, M.D.
New York

The subject of ulcers of the stomach and duodenum is still surrounded with numerous unsolved problems. The etiology has not been definitely settled and the treatment, medical or surgical, still forms a controversial point of discussion among physicians and surgeons. While the various theories regarding the etiology of peptic ulcers have to a certain extent a secondary influence on their management, the decision whether the treatment should be medical or surgical is of the highest practical importance. It must be answered by the practitioner at once when facing the situation.

It will, therefore, not be taken amiss if I limit my paper to the report of a few new cases of penetrating ulcers and one also of hourglass stomach observed and their treatment. In this connection I shall give the result of a follow up investigation of my old cases of penetrating ulcers described before. It will then be easier to answer the question whether the medical treatment of peptic ulcer is of value.

The cases of penetrating ulcer of the stomach and duodenum recently observed are the following:

Case I.—March 10, 1925 (Lenox Hill Hospital). Nathan H., sixty-two years old, complained for six months of pains in the epigastrium about one half hour to an hour after meals, lasting an hour or so. Light foods caused less distress than coarse substances. The patient ate less and less and lost thirty pounds in weight. He felt weak, could not sleep well, and vomited occasionally. His bowels were sluggish. Lately the patient was more or less bedridden; he took only little of the lightest foods and even then atropine and at times morphine were required to keep his suffering in abeyance.

The physical examination showed slight dilatation of the heart to the right and low sounds. The liver was slightly enlarged. The epigastrium was slightly painful to pressure. The stomach extended to one finger's width below the navel.

The gastric contents showed hydrochloric acid plus; total acidity, 60; no blood. The string test was as follows: blood stain 40-50 cm.; bile stain 60 cm. to the end.

The x ray showed a hazel nut sized niche in the middle third of the lesser curvature, best seen in the oblique position. The diagnosis of penetrating ulcer was made.

Although the possibility of malignancy could not be excluded, it appeared best to give the patient first the benefit of medical treatment. His weak heart seemed to give the patient a poor chance for surgery.

The patient was put upon duodenal feeding. His suffering continued for a few days under this régime requiring codeine to allay the pain. Soon, however, the patient's condition improved. From the fifth day of duodenal alimentation no sedatives were required. The only medication he received consisted of calcined magnesia two gr. and bismuth subcarbonate iss t. i. d. in water, by mouth.

During this treatment the duodenal contents were examined in the fasting state with the following result: dark, yellow, turbid, alkaline, brownish particles containing bunch berry crystals were present; A=5; S=3; T=3.

After two weeks of duodenal alimentation a renewed examination by the röntgen rays showed that the niche had entirely disappeared. The tube was removed and the patient was fed by mouth. A few days later the patient was able to eat ordinary foods without discomfort. He remained well and has gained considerably in weight and strength. One year later he sent a report that he attended to his business right along and felt perfectly well.

Case II.—Joseph K., December, 1925 (Lenox Hill Hospital). This patient was thirty-six years old, single and a painter by occupation.

He complained of pain in the epigastrium for three months; the pain was sharp in character. It was located in the epigastrium and occasionally radiated to the back. The pain came on two hours after meals and was relieved by food. There was no history of previous attacks. The bowels were constipated. There was tenderness in the epigastrium. The string test showed a blood stain nineteen and a half inches from the lips. The Wassermann test was negative.

The stomach contents were: hydrochloric acid=66; acidity=88. The stool was negative for blood. The x ray of the stomach showed a niche in the bulbus (Fig. 1).

*Read before the Harrisburg Academy of Medicine on May 28, 1926.

The patient was treated by duodenal alimentation. He was very much better. After treatment the patient was x rayed again and the niche had disappeared (Fig 2).

Case III.—E. de V., forty-three years of age, (Lenox Hill Hospital). This patient began to suffer three years ago from epigastric distress about one

Fig. 1.—J. K. October 21, 1925. Before treatment. Small niche on the lesser curvature of the duodenum.

hour after meals from time to time. For the last three months the patient's trouble became more aggravated. His appetite was very poor and there were pains in the gastric region pretty soon after meals. Patient lost considerably in weight and strength.

Physical examination revealed tenderness on pressure over the entire epigastrium. The stomach was slightly dilated, extending two fingers' width below the navel. The liver was enlarged. Patient looked emaciated and pale. The urine was free from sugar or albumin. The blood count was as follows: hemoglobin, 85 per cent.; red blood cells, 5,360,000; white blood cells, 13,400; polymorphonuclear, 70 per cent. The gastric contents showed hydrochloric acid plus; acidity=20. The string test revealed a blood stain 18-19 inches from the lips; the bile stain was 23 inches from the lips to the end of the string. The duodenal contents were dark red, and very turbid (blood was present); alkalinity was 30; amylopsin, 10; steapsin, 3; trypsin, 1; red blood cells, mucus and cholesterin crystals were present.

The x ray examination of the stomach revealed a niche of large size in the middle third of the lesser curvature. The diagnosis was penetrating ulcer of the stomach.

The patient was put on duodenal alimentation. The pain first persisted and for a few days hot applications and opiates had to be employed. Soon, however, the patient was more comfortable and there was no need of any sedative remedies.

Two weeks after the treatment the size of the ulcer not being diminished the duodenal alimentation was carried on for another week. A new x ray showed considerable reduction in the size of the niche. The tube was then removed and the patient fed by mouth (Figs. 3, 4, 5).

The patient had to leave for his native country (Spain) and was advised to have x ray pictures taken from time to time. In the event that the niche did not disappear he was advised to have an operation. The patient is now (one year) attending to his business and comfortable without any operation, although using antacid powders from time to time.

Case IV.—B. S., forty-five years old; April 1, 1926 (Lexington Hospital). The patient had been complaining of dull pain in the epigastrium for the past two months. He had a similar attack one year ago, which lasted about three weeks. The pain came on two hours after eating, dull in character, did not radiate but was localized in the epigastrium. Food and bicarbonate of soda relieved the pain. Occasionally it awakened him at night; no vomiting; no loss of weight. Patient was constipated and at times troubled with gas and sour eructations.

The gastric contents were hydrochloric acid plus; acidity, 90; blood plus. The string test showed a blood stain 56-58 cm. from the lips; bile stain 60 cm. to the end. The x ray revealed a niche on the inner border of the duodenum. The urine showed a faint trace of albumin. The physical examination showed tenderness in the epigastrium and a slightly swollen liver. The patient entered the Lexington Hospital on April 1, 1926, and the feedings were started on April 4, 1926. The tube was removed on April 20, 1926. The patient felt very comfortable. The niche had disappeared after the patient had been treated for two weeks (Figs. 6 and 7).

Case V.—W. D., April 5, 1926, fifty-nine years old (Lexington Hospital). The patient had typhoid fever seven years ago. This patient had pain in the epigastrium for the past month. He had a similar trouble about four years ago. The pain was located in the stomach, just above the umbilicus, came on one and one half hours after eating, was relieved by food and radiated straight through to the back. Two attacks of pain were so severe that morphine was resorted to. The patient was slightly constipated. He vomited a few times.

The gastric contents were hydrochloric acid, plus; acidity, 35; blood plus. The string test showed a

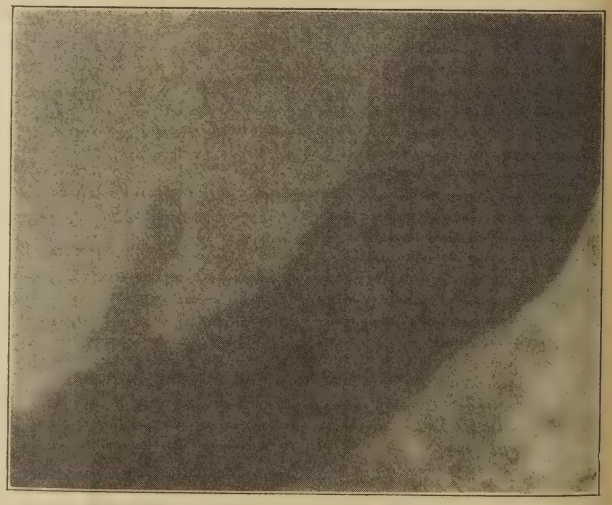

Fig. 2.—Same patient as in Fig. 1. November 14, 1925. After treatment. The niche had disappeared.

blood stain 50-53 cm. from the lips; bile stain 55 cm. to the end. The x ray showed a large penetrating ulcer on the lesser curvature of the stomach. Wassermann was negative. The physical examination revealed tenderness in the epigastrium.

The patient was admitted to the Lexington Hos-

pital on April 2, 1926. The duodenal feedings were started on April 5, 1926. The tube was left in the duodenum five weeks. It was removed on May 7, 1926.

During the treatment the niche had gradually decreased in size, so that at present it is one tenth of its original size (Figs. 8, 9, 10, 11, 12). Patient is feeling very well and is eating a liberal diet.

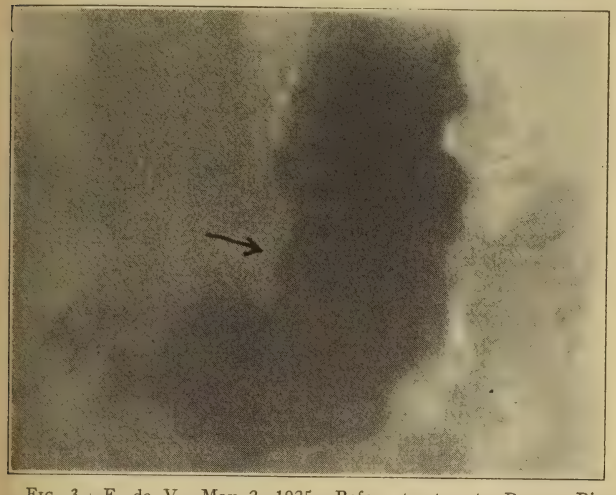

FIG. 3.—E. de V. May 2, 1925. Before treatment. Prone. Big niche in the middle of lesser curvature of stomach.

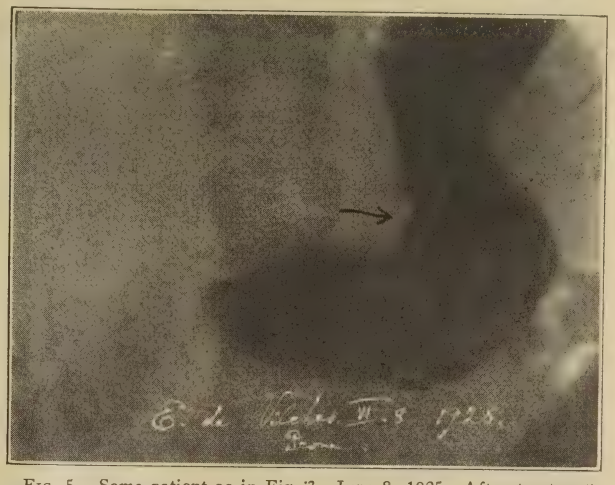

FIG. 5.—Same patient as in Fig. 3. June 8, 1925. After treatment. Prone. The niche is hardly one fifth of its former size.

CASE VI.—Mrs. Anna F., sixty-one years old; March 1, 1926 (Lexington Hospital). This patient had been complaining of pain in the stomach for the past two weeks. Patient had been operated upon six years ago for a gastric ulcer, a resection having been performed. She was well until eight months ago, when she began to have pain in the stomach about one hour after eating. The pain was severe and the patient was unable to eat at the time she had the pain. She was treated by duodenal feeding and felt well until two weeks ago. Since that time the patient has had severe pain in the epigastrium one hour after meals. The pain was rather severe and was not relieved by food. Bicarbonate of soda gave her some relief, but at times even this failed to relieve the pain. Patient also complained of heartburn and belching of gas and constipation. She vomited occasionally. The patient had lost ten pounds in weight in two weeks.

The gastric contents were hydrochloric acid plus; acidity, 70; blood negative. The string test showed a blood stain 40-42 cm. from the lips and bile stain 50 cm. to the end of the string.

The physical examination revealed tenderness in the epigastrium and the entire left lower quadrant. The tongue had several large patches on it, which were tender and free from the coating, covering the remainder of the tongue. The liver was slightly swollen. The patient looked as though she had been suffering.

The x ray examination showed a typical hour glass stomach. After atropine the same picture was obtained by the x ray (Fig. 13).

The patient was admitted to the Lexington Hospital on March 1, 1926, and duodenal feedings started on March 3, 1926. The tube was removed on March 14, 1926. After treatment the hour glass contraction disappeared (Fig. 14). The patient is feeling well and takes a liberal diet.

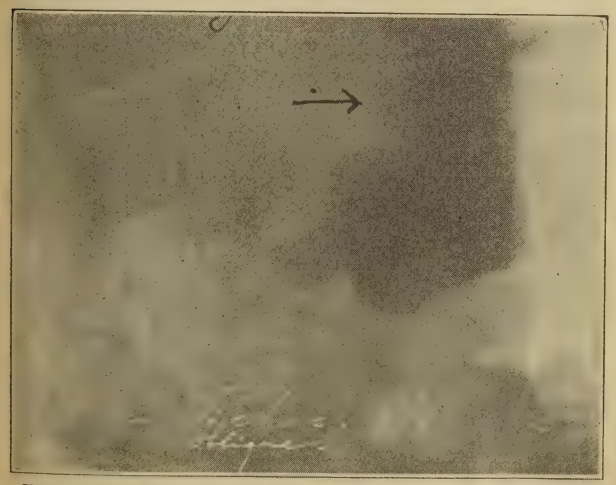

FIG. 4.—Same patient as in Fig. 3. May 8, 1925. Oblique. Large niche in the middle of lesser curvature of stomach.

FIG. 6.—A. Salzman. March 15, 1926. Before treatment. Small niche on the lesser curvature of the duodenum.

Two cases, one of gastric ulcer (E. K.) and one of duodenal ulcer (M. D.) recently occurred in patients who had been treated by me before. Following is a brief sketch of them:

Case VII.—E. K. (first admission), aged forty-two, married, chauffeur by occupation, was admitted to the Lenox Hill Hospital, November 17, 1920.

The patient complained of epigastric pain coming on about one and one half hours after eating, relieved

Fig. 7.—Same patient as in Fig. 6. May 14, 1926. After treatment. The niche has disappeared.

by food or belching. This pain had been present on and off for two years, although the patient complained of pyrosis for ten years. The patient vomited one quart of blood two weeks ago. The bowels were constipated.

The gastrointestinal series of x rays were negative. The string test was positive, the blood stain being present 21½ inches from the lips.

The patient was placed upon duodenal feedings and he was discharged from the hospital December 13, 1920.

Second admission—December 8, 1921.

The patient was relieved from symptoms until three weeks ago, when he had a similar recurrence. The x rays showed an infiltration and distinct protuberance along the lesser curvature. The patient was treated and the x rays showed that the ulcer had disappeared. He was discharged from the hospital January 4, 1922. The patient had gained forty pounds and was perfectly well for over four years.

Third admission—January 8, 1926.

The patient was free from symptoms until eight weeks ago, when he ate a cheese sandwich and was seized with cramplike pains in the abdomen. Since then he had suffered from pain in the epigastrium after eating.

The gastric contents were hydrochloric acid, 60; acidity, 72. The string test was negative. The stool was negative for blood and the Wassermann was negative. The x ray showed an ulcer of the posterior surface with incisure. After two weeks of duodenal alimentation the patient feels well. The incisure is not visible on the plates but fluoroscopic examination still shows it at times.

Case VIII.—M. D., admitted to the Lenox Hill Hospital on December 29, 1923. This patient was thirty-four years old and a waiter by occupation (first admission).

The history was as follows: Patient had cramplike pains in the epigastrium.

The patient had a bladder operation in 1921; appendectomy in 1919. Five years ago he had a similar attack of stomach trouble for which he sought treatment now. For the past three weeks the patient had been having cramplike pains in the epigastrium immediately after meals. He vomited occasionally.

The x ray showed a protruding niche on the lesser curvature. The patient was placed upon duodenal feeding. After treatment he was x rayed again and the niche had disappeared. The patient was discharged on January 31, 1924.

Second admission—January 9, 1926.

The patient was free from symptoms until four weeks ago. Since then he has been complaining of severe cramplike pains in the abdomen. They radiate to the back and are somewhat relieved by eating; no vomiting; no tarry stools; no loss in weight. The patient had been eating everything.

The gastric contents were hydrochloric acid, 38; acidity, 64. Wassermann, A=0; C=2 plus. The x ray showed a deformity of the cap which disappeared after duodenal alimentation.

The result of treatment in the new cases just described was very good. The niches have disappeared in all, excepting in two, E. V. and D., in whom about one tenth of the original niche is still visible. The probability is that in from two to four weeks even this remnant of the pouch will entirely vanish. In Mrs. F. the hour glass stomach has disappeared.

In order to have an idea of the permanency of the

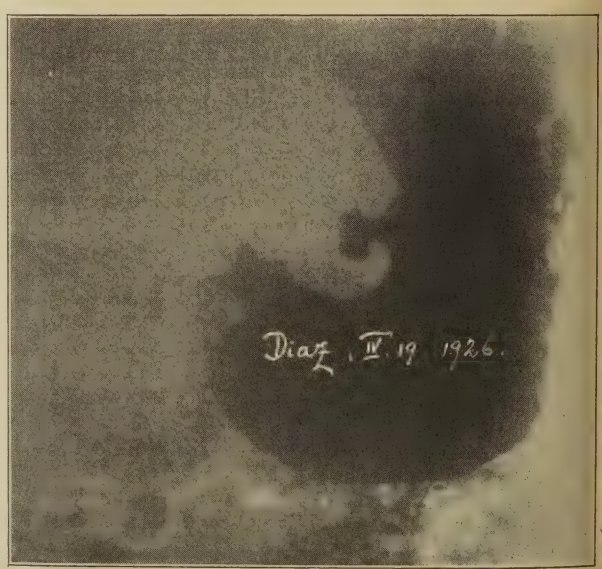

Fig. 8.—W. D. April 19, 1926. Before treatment. Large niche, mushroom form, on the middle of lesser curvature.

results of treatment I have tabulated my cases (1921-1926) of ulcers of the stomach and duodenum, in which visible niches or deformities were seen by x rays before treatment and had disappeared after treatment, with a follow up to date. Two cases of big penetrating ulcer of the lesser curvature of the

stomach with probable malignancy and one case of duodenal ulcer with Hodgkin's disease are not included in this group (D, K. R., and S. H.). But even in the malignant type of ulcer there may be at first a retrocession of the process for quite a while.

FIG. 9.—Same patient as in Fig. 8. April 26, 1926. During treatment. Niche somewhat smaller. Capsule end of tube visible beneath the stomach.

In looking over the table containing the cases of penetrating and callous ulcers of the stomach and duodenum treated by me since 1921 with a follow up to date, the following can be said:

Immediate good results were noted in all of the thirty-four cases. The further progress was good in thirty cases, and merely bearable in two (W. and R.). In two operations became necessary after the cure of the gastric ulcer. There were adhesions over the duodenum and gallbladder in one. He was operated upon and is alive and in good health up to date. In the other after a recurrence and cure of the ulcer, an operation for a chronic cholecystitis was performed. The patient died on account of a weak heart and bad liver. We could not obtain any information about two patients (S. K. and J. L.). Another patient (Karl B.) died one year later from pneumonia after having been in perfect health. All the others are well excepting two (E. K. and M. D.) who had recurrences of ulcers but not in the same spot and were treated with duodenal alimentation with good result. They are both described in this paper (Cases VII and VIII).

Cases L. K., A. R., J. W., and W. D. (Nos. 2, 3. 22, and 32, of the accompanying table) are of great interest in showing the gradual steps of the healing process extended over a period of six weeks to three months, the niche becoming gradually smaller until it entirely disappears.

With regard to recurrence of peptic ulcer we can put it at ten to twenty per cent., this variation depending upon the length of time and mode of living. If we consider that all these cases of callous and penetrating ulcer have been considered up to a few years ago by physicians and surgeons alike as belonging to the domain of surgery, we must say that the results obtained are more than satisfactory. The question, therefore, whether peptic ulcers (in the general run, which are certainly not as severe as those here described) should be treated medically or surgically must be answered "medically," with emphasis.

Having decided the main point at issue it behooves us to discuss in a few words the treatment of peptic ulcer, considering first its medical management and second the selection of those cases in which surgery is indicated.

The principle of rest plays the first and greatest part in the healing of peptic ulcers. The second point of importance is adequate nutrition, especially if a dietary régime should be applied for a longer period of time.

Erosions and small ulcers heal frequently without any medical aid. If the affection reaches a certain degree and the process becomes more extensive, then the healing does not take place by itself. The patient becomes aware of disturbances in the act of digestion and he is forced to seek medical aid.

The extent of suffering and the ability to undergo treatment play a part in the selection of a suitable plan of treatment. Thus in severe cases (hemorrhages, vomiting, pains in the upper abdomen) rest in bed, abstinence from food by mouth, rectal feeding and rectal instillation of fluids by the Murphy drip, used to be and still is, to a certain extent, the general mode of procedure. In the same instances duodenal

FIG. 10.—Same patient as in Fig. 8. May 3, 1926. Niche about one eighth its original size, still mushroom form.

alimentation can be instituted with greater comfort and advantage to the patients. This mode of procedure combines the principle of rest and adequate nutrition and has the advantage that it can be applied for a long time. In patients who are willing to sub-

TABLE OF CASES OF PEPTIC ULCERS ACCOMPANIED BY DEFORMITIES VISIBLE BY X RAYS TREATED MEDICALLY AND FOLLOWED UP TO DATE. (1921-1926.)

	1921		1926	Remarks
1.	E. K.	Stomach	Gained in weight, feels all right.	Felt all right till 1926, then came back with a new ulcer of another part of the stomach. Treated again and the ulcer disappeared.
2.	L. K.	Stomach	All right ever since treatment, gained eighteen pounds	
3.	A. R.	Stomach	All right, gained forty pounds.	
4.	A. B.	Duoden.	All right.	
5.	J. L.	Duoden.	Not heard from.	
6.	A. G.	Duoden.	All right.	
	1922			
7.	S. D.	Stomach	Attends to his business feeling all right.	Two years after treatment slight attack of cholecystitis. Stomach examined by x ray and no ulcer found.
8.	J. E. Mc.	Stomach	All right.	Had a gastric ulcer; operated one year later for adhesions over the duodenum; gastroenterostomy having been done with good results.
9.	H. A.	Pylorus	Gained in weight, feels all right.	
10.	F. D.	Stomach	Gained in weight, feels all right.	Before treatment defect in the pyloric portion of the stomach; after treatment the defect almost disappeared.
11.	T. F.	Stomach	Gained in weight, feels all right.	Before treatment the pylorus was lengthened and rigid, after treatment deformity less marked.
12.	Miss I. W.	Stomach	Alive and complaining. (Gained fifteen pounds.)	Before treatment defect in the prepyloric portion of the stomach and sacculation in the second part of the duodenum; after treatment defect and sacculation disappeared.
13.	Mrs. B. Mc.	Duoden.	All right.	
14.	Mrs. C. H. R.	Duoden.	Still complaining. (Gained thirty pounds.)	
15.	J. P. B.	Duoden.	All right.	
16.	K. B.	Duoden.		Attended to his business as a chauffeur for one year, then died of pneumonia.
17.	M. S.	Duoden.	All right.	
18.	T. K.	Duoden.	Not heard from.	
	1922			
19.	J. B.	Duoden.	All right.	
20.	F. M.	Duoden.		Had recurrence one year later and improved under treatment; died after operation for gall bladder.
21.	H. M.	Duoden.	All right with exception of neuritis.	
	1923			
22.	J. W.	Stomach	Gained 40 pounds in weight, is attending to his business, perfectly well.	
23.	J. H. O.	Stomach	Gained thirty pounds, feels good and attends to his business.	Christmas 1925 patient indulged too much in alcohol and suffered from digestive disturbances for a short time. Re-examination with x ray showed that the niche was missing.
24.	D.	Stomach	Gained in weight, feels good.	Had a relapse December, 1925, but the ulcer was in another part of the stomach; duodenal alimentation removed the symptoms.
25.	Mrs. F. S.	Stomach	All right.	
	1924			
26.	W. L.	Stomach	Gained in weight, feels all right.	Six months after the cure of the ulcer, was operated for appendicitis.
27.	J. R.	Stomach	Gained thirty-five pounds in weight, feels all right.	Good sized niche.
28.	C. E.	Stomach	Gained in weight, feels all right.	
	1925			
29.	E. de V.	Stomach	Gained in weight, feels all right, but takes antacid medication.	
30.	N. H.	Stomach	Gained in weight, feels all right.	
31.	J. K.	Duoden.	Feels all right.	
	1926			
32.	D.	Stomach	Feeling good, niche smaller (one-tenth its original size).	
33.	Mrs. F.	Hourglass Stomach	Feels all right.	
34.	S.	Duoden.	All right.	

Cases 1, 2, 3, 4, 5, 6, 7, 8, 9, 14 were described in the N. Y. MEDICAL JOURNAL December 6, 1922.

Cases 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25 were described in the N. Y. MEDICAL JOURNAL November, 1923.

Cases 26, 27, 28 were described in *Annals of Clinical Medicine*, Vol. IV No. 5, November, 1925.

Fig. 11.—Same patient as in Fig. 8. May 14, 1926. After treatment. Small niche about one tenth original size, now a rather small pyramid shape.

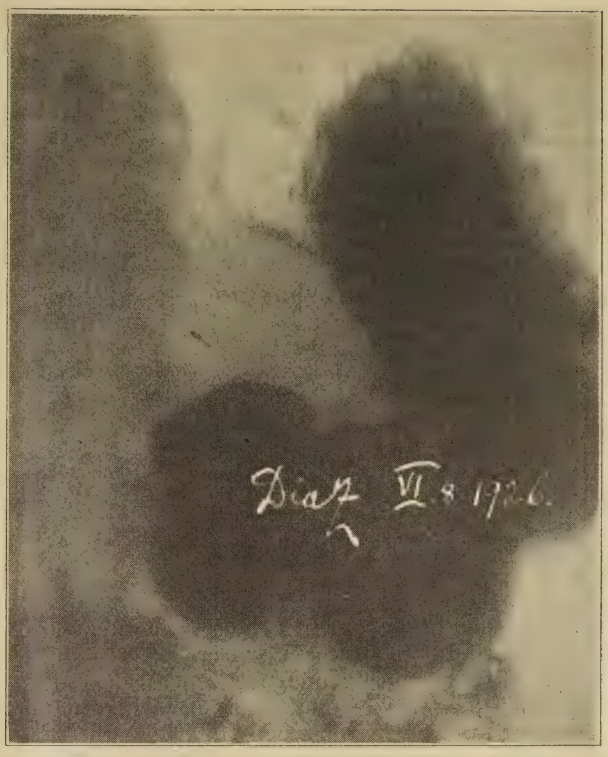

Fig. 12.—Same patient as in Fig. 8. June 8, 1926. Niche has diminished in height but seems a trace wider at its base.

mit to duodenal alimentation, this mode of procedure should be applied in all forms of peptic ulcer (mild and severe).

All other phases of treatment carry out the principle of rest only partially. To these belong Cruveilhier's milk régime, Leube-Ziemssen's rest régime and diet (milk and gruels), Lenhartz's diet, milk, eggs and meat with restriction of fluids), Sippy's diet (feeding every hour and the addition of alkalies), Coleman's diet (white of eggs, olive oil or butter by the stomach and glucose instillation by rectum).

Most of the patients are kept in bed. In mild cases, however, an ambulatory régime is also at times permissible. Here a liberal diet, frequent meals and

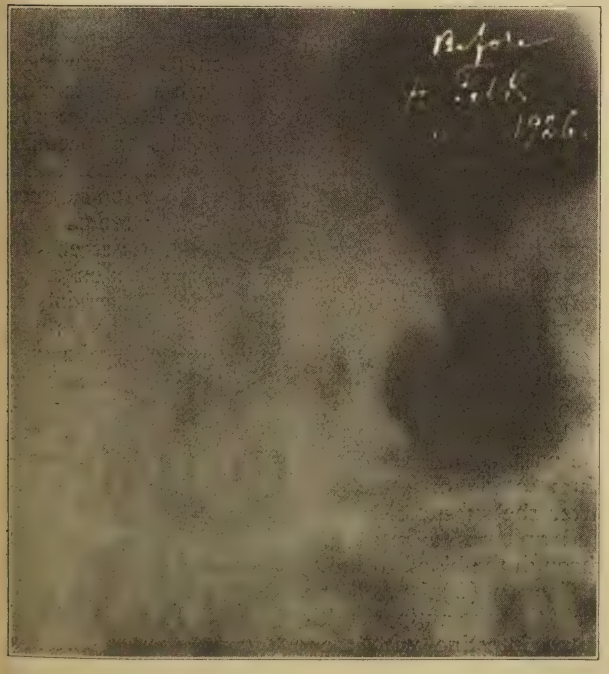

Fig. 13.—Mrs. A. F. March, 1926. Before treatment. Hourglass stomach.

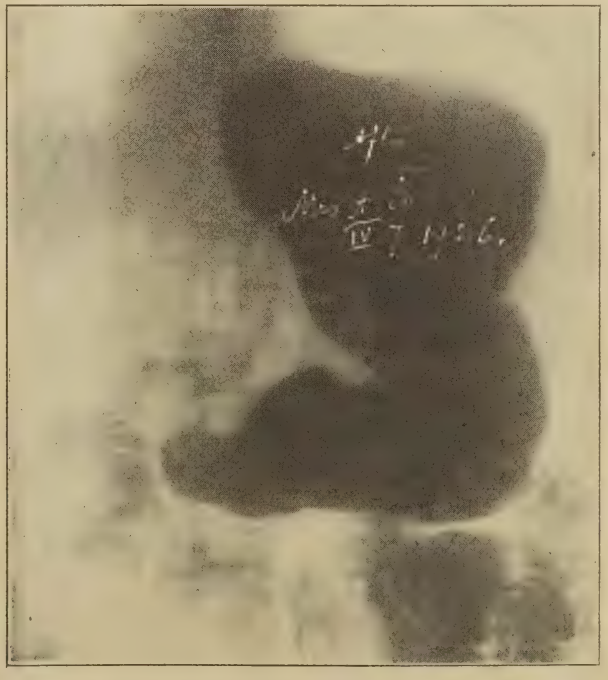

Fig. 14.—Same patient as in Fig. 13. April 7, 1926. After treatment. The stomach has assumed an almost normal configuration.

avoidance of highly seasoned substances are the main features of the treatment.

In the way of medication bismuth, alkalies, olive oil and antispasmodics (atropine, papaverin), nerve sedatives, and mild aperients form the main remedies generally employed.

The indications for surgery (in peptic ulcers) are:

1. Perforation of the ulcer.
2. Ulcers leading to obstruction of the pylorus.
3. Ulcers of stomach with malignancy suspected.
4. Callous ulcers (niches) not yielding to rigorous treatment.
5. Recurrence of massive hemorrhages from the stomach or duodenum endangering life of patient.
6. Small gastric hemorrhages which go on uninterruptedly, resist all kinds of treatment, and endanger the life of the patient.
7. Gastric distress resisting all modes of repeated rational treatment, extending over a long period of time, and making life unbearable.

Before concluding I would like to express my obligations to William H. Stewart and H. A. Rafsky for the x rays taken from the last series of cases.

20 East Sixty-third Street.

Rectal Feeding

CHARLES J. DRUECK, M.D.,

Chicago

In presenting this subject I wish to state that I am not so enthusiastic as to suggest this method of alimentation as a substitute for conveying the nutriments by the normal avenue, but rather as a resource in the treatment of certain conditions where it may be desirable, or even imperative, to relieve the stomach of all food for a time, and thus temporarily sustain the patient by mechanically introducing food substances into the rectum and colon by way of the anus.

It has long been recognized that all mucous membranes will absorb certain substances and pass them into the lymphatics, but only recently has this knowledge been applied to rectal feeding. Kelsey cites numerous authors who speak of the relative absorbing power of the rectal and gastric mucous membranes, and we find a considerable proportion of these writers conclude with an evasive statement to the effect that it has not as yet been definitely established that sufficient nourishment may be absorbed by the mucosa of the rectum and sigmoid colon to sustain life. Bauer, for instance, asserts that "not more than one fourth of the necessary nutriment, even under the best conditions, can be absorbed from the rectum." Such statements, in the light of our present knowledge, must be modified, however, because experience has shown that many patients not only live but some even gain slightly in weight when the injections are carefully given according to the directions that will be described further on.

Thompson (1) supported a patient seven weeks and Flint (2) tells of a patient who was nourished for fifteen months by rectal feeding alone, and who had been maintained chiefly by this method for five years. These are, of course, extreme cases, but it is safe to say that the average patient may be maintained for three to four weeks exclusively by colonic feeding and this is sufficient time to produce good results in most instances. Friedenwald and Rühräh, in their work, state that a person may be thus sustained for from four to seven weeks.

It is true, food given by the rectum cannot yield anywhere nearly as much nourishment as when taken into a healthy stomach by way of the mouth, because, with but rare exceptions, we can utilize only the large bowel; and yet, I believe that colonic feedings pass through into the small intestine much more frequently than we are prepared to admit. As a matter of fact, in colonic feeding, we certainly supply to the system all of the necessary fluids and inorganic salts, and at least part, and possibly all, of the amount of food required to sustain the individual while at rest.

Feeding by way of the rectum has been objected to mainly on theoretical grounds, with reference to the physiology. As to this I might reply that, so far as my experience shows, the method of administration very often is at fault.

The rectum proper (that is, the last six inches of the gut) has very limited absorbing power, but Landois has shown that the colon possesses a very marked assimilative power, although the digestive ferments of this part are feeble. Consequently, properly prepared foods are readily taken up from the colon, thus insuring a considerable nourishment to the system.

Recognizing the fact that patients are nourished by foods administered per rectum, while maintaining that the secretions of the rectum have little digestive power, certain authors have advanced most peculiar theories as to how assimilation is accomplished.

Flint, for example, says (3): "When food comes in contact with the rectum, while the stomach is empty, the gastric and intestinal juices descend to the rectum." Dr. Batty, from experiments on cadavers, concludes that the injected food ascends the whole digestive tract, instead of remaining in the rectum or colon. He thus accounts for the phenomenon of patients being able to taste substances such as quinine or castor oil when administered rectally. C. W. Brown, of Washington (4), cites a case where the patient was able to recognize the taste of potassium iodide or of ergot fifteen to thirty minutes after the substance was introduced into the rectum, and assumes a rapid absorption and transmission through the blood to the taste bulbs and the saliva.

Cannon (5) has observed by radiographs on animals that the antiperistaltic waves filled many coils of small intestine with the enema mixture. After a short time the segmenting movements were seen in the loops, separating the food into small masses and

over and over again dividing and redividing them.

In practice, however, the retroperistalic action, whereby the enema is carried through Bauhin's valve into the small intestine, is the exception and most of the nutrient probably is absorbed directly from the colon. Voit and Bauer were the first to find that sodium chloride added to meat juice and peptones greatly adds to their absorbability when given in an enema, but the salt stimulates reverse peristalsis to such an extent that many writers (Grutzner and later Swieznski) have demonstrated in the stomach substances that have been administered per rectum.

PRINCIPLES OF RECTAL FEEDING

In rectal feeding, the minutest details are important; and, indeed, the enemata should always be administered by the physician himself, instead of intrusting the task to a nurse, inasmuch as the patient's life generally depends upon his ability to endure continuation of the treatment. If the rectum becomes irritated, it usually means suspension of this mode of feeding; and yet only rarely can the feedings be withheld long enough to permit the local trouble to subside. Occasionally it happens that a patient will object to rectal feeding, for esthetic reasons; and then the physician must use tact and persuasion.

Before going into the details of rectal feeding, I desire to impress the following facts upon the reader as being very vital to the success of the treatment: 1. The rectum must be free from feces and mucus before giving the enema. 2. Any irritability of the rectum is to be relieved as quickly as possible. 3. The quantity and quality of food introduced must be regulated carefully, to avoid peristalsis, and to allow complete absorption of one portion before another is injected.

INDICATIONS FOR RECTAL FEEDING

Feeding by way of the rectum is indicated under the following circumstances:

1. In temporary obstruction to the entrance of food into the alimentary canal, as by new growths, foreign bodies, inflammatory swellings of the mouth, pharynx or esophagus resulting from disease, corrosive poisons such as carbolic acid or ammonia or from hot fluids.
2. Inability to swallow food, as during coma, delirium or in postdiphtheritic paralysis; also during acute insanity when food is refused by mouth.
3. In gastric disturbances, such as acute gastritis, ulcer or cancer (when it is desired to rest the stomach), reflex vomiting of pregnancy, or sea voyages.
4. In stricture of the lower digestive tract anywhere above the colon.
5. In weak digestion and increasing emaciation.

MODE OF ADMINISTERING THE ENEMA

The utmost care is necessary in the manipulations, because irritation and injury to the rectum are inevitable if careless, rough or unskilled attempts are made. I mention the ordinary syringe with the short nozzle only to condemn it. For children, a No. 6 "velvet eyed" flexible catheter may be chosen, but for adults a 14 catheter should be employed. The rectal tube should be sufficiently rigid to free itself and not bend or double if it catches in a fold of mucous membrane, and yet, must not be so stiff as to cause pain or damage when introduced. Olive oil, salad oil, melted butter or vaseline may be applied for lubricating; but never glycerin, since this tends to excite peristalsis.

Just how far the rectal tube can be passed into the colon is a mooted question. Certain authorities say they are able to reach the transverse or even descending colon, while others (Nothnagel, Naunyn Boas) maintain that the tube invariably coils upon itself in the ampulla, or dilated portion of the rectum. Rosenberg and Lilienthal found that by using the sigmoidoscope they could pass a soft tube as far as the middle of the sigmoid flexure, but no further; the greatest distance being thirty centimetres, or twelve inches. Soper has carried out a series of experiments, with the patient on the side and in the knee-chest position, and found that the tube invariably coiled up in the ampulla. In the *Journal of the American Medical Association* for August 7, 1909, he shows radiographic pictures of the position of the tube. He shows positively that the rectal tube seldom passes more than six or eight inches into the rectum without kinking and that to introduce it farther causes, 1, kinking of the tube and obstructions to the flow of liquid into the bowel, and 2, such distention of the bowel as to stimulate evacuations. This latter fact undoubtedly is one of the causes of failure of retention of nutrient enemata when given "high."

In adults, then, I introduce the tube a distance of six or eight inches. This prevents the ejection of the fluid and brings it in contact with a large amount of mucous membrane. There is also an anatomical reason for passing the fluid high. The blood returned from the colon, sigmoid flexure, and superior hemorrhoidal veins enters the vena cava so that substances absorbed by these latter veins do not go through the liver, while substances absorbed higher up pass through the vena porta to the liver and are there further elaborated.

A fountain syringe or an ordinary stomach tube and funnel may be attached to the rectal tube. The apparatus must be tried before putting it to use, in order to see that all is in working order. It is well to heat the appliances to about 100° F., so as to prevent chilling the nutrient to be introduced, for fluids if too hot or too cold are promptly expelled, an enema at 90° to 95° being retained best.

When everything is ready the tube is filled with the fluid before introducing, to insure the exclusion of air, because air is very likely to stimulate peristalsis and, hence, evacuation. The injection must be given slowly, taking ten or fifteen minutes, because rapid infusion also stimulates unwelcome peristalsis.

One of the first essentials for absorption by the colon is cleanliness within. It is evident that, if the colon or sigmoid flexure is filled with feces or the sides are covered with mucus, it is impossible for osmosis to occur. Consequently before any nutriment is introduced, the colon must be thoroughly emptied and cleansed.

One hour before the time of giving the morning feeding the colon should be flushed with a high injection of one quart of normal salt solution. A return flow catheter must be provided, that the water may find easy exit and thus avoid inciting peristalsis. In many instances, one such cleansing each day will be sufficient; but if much mucus is present it is well to precede each feeding with the cleansing clyster,

and here the salt should be substituted by two teaspoonfuls of sodium bicarbonate. When the rectum is tender or inflamed, a saturated solution of boric acid is borne best. This procedure washes out any undigested food or waste matter, cleanses the mucous membrane, stimulates the local circulation, and thus provides better absorption.

The proper temperature of the flushing solution is a matter of some difference of opinion. Tuttle recommends cold water, because he finds that this acts more promptly and, he thinks, leaves the bowel more tolerant to the succeeding nutrient enema. My own preference, however, is for the solutions at nearly body heat, as they cause less reaction, or, in other words, congestion of the colonic mucosa. The nutrient enema being kept in contact with the tissues for a considerable time, it necessarily must induce some reaction and, if by any kind of treatment we overstimulate and thus irritate the colon, it promptly expels the entire contents; and this may determine our case unfavorably. A very important point is, to flush out the bowel quite a while before giving the nutrient (in my practice I make this about one hour) and then allow the patient absolute rest in bed.

The tube is introduced with a twisting or boring motion, to avoid its becoming caught in the folds of the mucosa. If it meets resistance a little of the fluid is admitted and thereby the gut dilated or ballooned. After the tube has passed the sphincters (about four inches) procedure is suspended for a few minutes, until the temporary excitation has subsided; during this period of rest any colon gas present is frequently expelled. The tube then is pushed as high as desired, to bring the fluid into contact with a large amount of mucous membrane and to lessen the tendency toward ejection.

When the tube is nearly emptied and before any air has a chance to rush in after the injection, it is firmly compressed and slowly but steadily withdrawn. To aid retention, a soft, folded towel should be firmly pressed against the anus for twenty or thirty minutes. This reduces the temporary excitement and the tendency to evacuation. The patient should remain quiet for at least an hour and be instructed to do his best to retain the fluid; cheerful conversation by the doctor or attendant diverts the patient's mind and is of much assistance where there is danger of its not being retained.

A correct position of the patient also assists, the left lateral prone, with the hips raised (on a pillow) usually being sufficient; although, if the patient is nervous or hysterical, it is well to adopt the knee-chest posture. In gynecological or obstetrical cases where enemata are given, it must be remembered that tight vaginal tamponing interferes with absorption from the rectum.

The number of injections a day depends upon the relative irritability of the rectum, and at the beginning they should be one in six or eight hours. If after two days the rectum is in good condition and it is necessary to give small enemata frequently, they may be repeated every four hours. However, frequent clysters usually irritate the rectum and have to be suspended soon.

CARE OF THE RECTUM

The exact condition of the rectum might be determined and explicit instructions given to the nurse when it is desired to continue nutrient enemata. Failure often results from leaving this matter to persons ignorant of the anatomy and the conditions to be observed; when, if the attendant were intelligent and skilled in these details all troubles would be overcome. It is the duty of the physician to do the work himself whenever possible.

In the beginning the clysters may be rejected, but when properly prepared and administered the rectum quite often soon acquires a tolerance, so that the nutrient enemata may be administered in sufficient numbers and volume to support the patient for weeks.

Proctitis is always likely to arise, and it is only occasionally that irritation and diarrhea does not occur within two or three weeks. When this does happen, the enemata must be stopped temporarily to be resumed after the bowel improves. All local troubles, such as ulceration, fissure, fistula, and hemorrhoids are drawbacks. The presence of hemorrhoids is one of the most unfavorable handicaps to the treatment, because they are so easily irritated and inflamed and they then set up a spasmodic contraction of the sphincter. When hemorrhoids exist, great care must be exercised to avoid irritating them by rough usage of the catheter; under these circumstances I always use a soft flexible catheter. If the hemorrhoids are at the orifice, I paint them with a two per cent. solution of cocaine before introducing the fluid, applying immediately afterward a mild astringent and sedative ointment.

(To be continued.)

The Rôle of Infections in Proctology*

FRANK C. YEOMANS, M.D., F.A.C.S.
New York, N. Y.

If we exclude congenital anomalies, trauma, prolapsus and certain neoplasms, infection is responsible for practically all of the remaining pathology of the terminal bowel.

In general the infecting agent is endogenous or exogenous and either simple or specific. Therefore, to gain a clue to the nature of the infection a complete history is requisite, including not only the present illness but residence in the tropics, mouth, throat, and chest conditions, venereal infections, operations, habits of eating and drinking, and exposure. Broadly speaking, we may separate infections into two classes; those which limit their activity chiefly to the bowel wall proper and those which extend beyond it. In-

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cluded in the bowel wall infections are the various forms of colitis, ranging from the socalled infected colon to chronic ulcerative colitis, which may be the terminal stage of a specific infection, the lesions of which have become secondarily infected by the ordinary intestinal flora. The usual specific infections are bacillary, amebic, gonorrheal, syphilitic or tuberculous. If seen at certain stages in their development, specific infections present lesions diagnostic to direct inspection through the proctoscope or the etiological organism can be recovered and recognized microscopically. This is particularly true of amebiasis, the early, discreet, pearl grey lesions of which are characteristic and the causal amebæ can be demonstrated readily on the warm stage in fresh scrapings from the ulcers. In this latitude amebic infection is of relatively mild intensity but persistent and usually confined to the colon, and its most common complication—abscess of the liver—seldom occurs, three instances being found in about 150 personal cases. In the tropics, on the contrary, the onset is often violent and the course rapidly fulminating with gangrene of the colon and fatal termination.

BACILLARY DYSENTERY

Bacillary dysentery is characterized by considerable elevation of temperature at first and frequent stools which contain the specific bacilli at the onset but they soon disappear under maintained high temperature and the ordinary intestinal flora may secondarily infect the lesions initiated by the bacillus dysenteriæ.

TUBERCULOSIS

Tuberculosis finds its early and chief seat in the cecum and, in the adult, is practically always secondary to pulmonary involvement. Given a history of lung tuberculosis, diarrhea or irregular bowel actions, the fluoroscope may show irritability of the cecum by its rapid emptying in early involvement or, later, delay when the bowel wall is thickened by the inflammatory process. The tubercle bacilli very seldom can be found in the stools. Tuberculous ulcers occur in the rectum and may result in a stenosis or a hyperplasia may develop in this situation—a tuberculoma—which in many features resembles a carcinoma, the true nature of which can be determined only histologically. Tuberculous extension in the perirectal tissues manifests itself as a "cold abscess" the opening of which forms a tuberculous fistula.

SYPHILIS

The primary extragenital chancre is occasionally seen at the anal verge. Secondary lesions of the rectal mucosa have been observed but the tertiary manifestations of syphilis are of chief clinical interest. They occur at first as ulcers of the mucosa with circular infiltration of the bowel wall, the terminal stage of which is stricture, most frequently involving the rectum but occasionally other segments of the colon. One case of gumma in the ischiorectal fossa came under my care.

GONORRHEAL INFECTION

This is usually limited to the rectum unless spread to higher levels by too vigorous irrigations. The history of exposure, an atonic anal canal and creamy pus containing gonococci establish the diagnosis. Suitable treatment promptly relieves the acute symptoms but a protracted catarrhal proctitis usually follows.

ULCERATIVE COLITIS

Chronic ulcerative colitis may be a sequel to amebic or bacillary dysentery, as already noted, but more often is apparently due to some change in the usual intestinal bacteria, rendering them pathogenic, or the normal resistance of the host has been weakened by countless causes. The colon bacillus in its many strains is probably the chief active factor though cultures sometimes show a predominating streptococcus or other organism. Bargen (1) has made a praiseworthy experimental and clinical effort to discover a specific organism. He has described a gram positive, lancet shaped diplococcus having a tendency to form capsules and always appearing in groups of two or four, which he isolated from forty-five to sixty patients having chronic ulcerative colitis. The part played by disturbances of metabolism, avitaminosis, etc., require further study. Whatever the etiology, the final picture is much the same. The early lesions may be mostly in the rectum and the sigmoid but the infection tends to spread upward and may involve the whole colon. Absence of haustrations on x ray plates after a barium clysma indicates fairly well the limits of extension.

The glands of the mucosa seem to be first involved, producing a felliculitis to be followed by gross ulcerations. As a rule, in all types of infection except the tuberculous and syphilitic, the inflammatory process is confined fairly well to the mucosa and submucosa, consequently while the bowel wall is thickened and more rigid than normal and may present a "gaspipe" appearance on an x ray plate, there is comparatively slight narrowing of the lumen and actual stricture is an exception. On the other hand, tuberculosis and syphilis, are typical examples of chronic productive inflammation and the connective tissue formed in large part replaces the musculature and in its contraction produces stricture. This is notably true of syphilitic ulceration and particularly so in the negro who is prone to form excessive scar tissue from any chronic lesion.

In amebiasis and chronic ulcerative colitis there is an ever present tendency to recurrence. This may occur months or years, as many as four years in some of my cases, after complete clinical relief. Hence it is essential to keep these patients under observation many years after apparent clinical cure. In fact, we never know when a patient is actually cured. From time to time direct inspection of the bowel should be made lest we miss a dire consequence of chronic ulceration of the mucosa, namely, the development of adenomata. They are a not uncommon sequel, are usually few in number, sessile and easily removed by forceps through the proctoscope. These small growths, *per se,* are of no consequence and but rarely develop into adenocarcinoma. Two instances of such transformation I reported at our meeting in New York in 1924, one in a colored man aged twenty-nine, with multiple prolapsus of the colon, the other in a woman aged thirty-two, who had had recurrent attacks of chronic ulcerative colitis for ten years, an adenocarcinoma finally developing four centimetres in diameter in the rectal ampulla. With such examples before us, it becomes our duty to remove all growths immediately upon their discovery, however innocent they may appear to be, for some of them may prove to be genuine precancerous le-

sions. The chief extraintestinal complication of amebiasis is abscess of the liver. As already stated, this is rare in this latitude, and I have met it in only three instances of approximately one hundred and fifty cases personally observed.

HEMORRHAGIC COLOPROCTITIS

This is a comparatively rare variety of bowel inflammation, usually occurring in young adults, but it may be encountered at any age. The etiology is not clear but its clinical course indicates that it is an infection of as yet an unknown nature. The process may be limited to the rectum, the rectum and sigmoid colon, or the entire colon may be involved, but it does not invade the ileum. With low involvement, there may be only five or six passages of blood daily, from the granular mucosa, constipation and protracted course. When the entire colon is implicated, bloody stools may number twenty or more daily; emaciation, weakness and anemia are progressive and, unless controlled, the termination may be fatal. In the acute cases proctosigmoidoscopy shows blood oozing from a mucosa uniformly inflamed and spongy. Hemorrhagic coloproctitis is to be differentiated from amebiasis, bacillary dysentery, multiple adenomata of the colon, and bleeding from a fungating neoplasm.

PROTOZOA

The protozoa infecting the intestines are classified on the basis of their mode of locomotion as:

1. Rhizopodia, typical of ameba, with locomotion dependent upon the pseudopodia. 2. Mastigophora, the flagellate, by a whipping movement of its filamentous protrusions. 3. Sporozoa, in the motile stage, by a vermicular movement of the entire body, and 4. Ciliophora, producing motion by its cilia (linthicum). In each group there are a number of species. The ameba has five, of which only one, the ameba histolytica, is apparently pathogenic. Five species of flagellate are known, the three most frequently found being Giardia intestinalis (also called Cercomonas or Lamblia), the Chilomastix mesnili and the Trichomonas intestinalis.

Opposing views are held as to their pathogenicity. Some investigators assert that a large percentage of persons harbor them and that they are harmless, while other observers consider them pathogenic. Their habitat is the bowel lumen and, as a rule, they produce no demonstrable lesion of the mucosa, although the Giardia may possibly produce ulceration. All of them, especially when in massive infestation, irritate ulcers of the intestine produced by other agents. The biliary passages and the appendix are apparently foci of infestation from which showers of reinfection may occur. No form of treatment has proved successful for their permanent eradication.

The Sporozoa comprise several varieties of Coccidia which are parasitic and most cases have been studied in Egypt.

The Ciliophora have several species, but the variety found most frequently in the large bowel, especially the cecum of man, is the Balantidium coli, measuring fifty to seventy m. in breadth. It is a specific parasite organism, producing ulcerative colitis and invades the tissues deeply. It is a natural parasite of the pig and man is its accidental host. It is seen most commonly in Russia, Finland and Sweden, but sporadic cases have been reported elsewhere.

ACTINOMYCOSIS

Actinomycosis is receiving considerable attention in the literature. According to Boestrom's theory, which is most generally accepted, it has its origin outside the body, the actinomyces being "capable of a dual existence primarily as a saprophyte in old soil from which it gains access to grains and grasses and through their medium becomes capable of infecting man and animals." In man its most usual habitat is the cecum and its spread is by continuity of the involved tissues and through the blood vessels but not through the lymphatics. Finding of the ray fungus is diagnostic. Four of thirty cases of pelvic actinomycosis recently reported by Helwig were of rectal origin. Last autumn I saw a girl aged nineteen with a brawny thickening of the anterior rectal wall of several months' duration, mild, irregular elevations of temperature and progressive loss of weight and strength. Laparotomy showed actinomycosis of the uterine adnexa. Autopsy in March, 1926, demonstrated wide extension beneath the pelvic fascia, and infiltration and ulceration of the rectum.

DIVERTICULOSIS AND DIVERTICULITIS

In recent years, as a result of x ray studies, autopsy and operative findings, diverticulosis of the large bowel has been encountered rather frequently. These herniations of the mucosa through the musculature may be an accidental finding, most frequently in the sigmoid and very rarely in the rectum. They may cause no clinical symptoms and be quite harmless. However, in certain cases, their stomata become so narrow that they do not empty completely. Inflammation ensues, producing a diverticulitis which takes an acute or chronic course. After eroding the mucosa lining the diverticula, the infection most frequently infiltrates along the mesenteric vessels or into the appendices epiploicæ. In acute diverticulitis an abscess may thus be formed which gives all the symptoms of acute appendicitis transferred to the left side, namely, pain, elevation of temperature, leucocytosis, local tenderness, etc. Unless recognized and relieved promptly by surgical intervention, the abscess may burst into the peritoneal cavity or rarely become adherent to another hollow viscous, as the bladder, and rupture into it. Usually, however, the infection pursues a chronic course, with production of connective tissue, infiltrating the bowel wall (perisigmoiditis), obstructing its lumen and forming a tumor having all the characteristics of a malignant growth. Indeed, even at operation, a chronic diverticulitis may so resemble a neoplasm that only histologic examination can settle the diagnosis. It seems probable that many cases of spontaneous cure reported after colostomy for a "cancer" of the sigmoid were in reality chronic diverticulitis. Thanks to improved methods of diagnosis, especially an x ray study, these errors in diagnosis are much fewer than in the past.

Local infections about the anus and rectum arise most commonly from a lesion of the mucosa produced either by a hard scybalum or a foreign body ingested, as a fish bone, or introduced per anum; unskilled use of examining instruments, or irrigation nozzles, or by prostatic massage. The latter fre-

quently initiates a proctitis and abscess may follow. The abscesses may be subcutaneous or submucous (mural) or in the cellular tissue beneath the superficial fascia. Of course, the most typical lesion is a fissure in the poorly nourished lining of the anal canal. Through this breach infection enters the cellular tissue to spread backward in the midline, forming a blind internal or complete fistula or laterly into the ischiorectal fossa of one side (ischiorectal abscess) and then across to the other fossa, eventually resulting in a horseshoe fistula. These are all quite evident on examination but there is another class of abscesses concealed from external signs, which are treacherous and dangerous if unrecognized. These are the deep pelvirectal abscesses located above the levatores ani muscles. They are extraperitoneal, produce chills, fever, pain and discomfort, at times retention of urine and leucocytosis, and a bulging in of the apparently intact rectal mucosa can usually be felt on digital examination. In one of my cases the picture was that of prostatic abscess with vesical retention but an unobstructed urethea and clear urine gave a cue to the correct diagnosis. Unless they open spontaneously into the rectum, the abscess in neglected cases may burrow upward and point in the inguinal region.

TUBERCULOSIS

Tuberculosis presents a separate and distinct problem. About fifteen per cent. of fistulæ are tuberculous and the infection is prone to spread in the perirectal cellular tissue, the cold abscess originating in tuberculous infection of the hip joint or tuberculous caries of the spine may point in the ischiorectal fossa.

From this cursory review it is evident that application of our present knowledge will enable us to diagnose correctly the nature and location of nearly all of the infections we encounter in the practice of proctology. However, the etiology and permanent cure of chronic ulcerative colitis remains one of the interesting problems in this field which still requires intensive study.

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171 West Seventy-first Street.

The Study of Rectal Diseases in America

J. F. MONTAGUE, M.D., F.A.C.S.

New York

Last year under the title of Rectal Surgery Abroad I contributed an article which consisted of a survey of the various rectal clinics abroad and the opportunities offered there for special postgraduate instruction in proctology. In response to this I have had fairly numerous requests for information, curiously enough not about postgraduate instruction abroad but about similar opportunities here in America. It naturally occurred to me that an article presenting such data might be of service not only to those who have written me, but also to the many mute inquirers who, I am sure, exist.

The establishment of the speciality of proctology, or the study of rectal diseases, is not nearly as recent in its origin as one might infer from the relatively few men who have been shrewd enough to establish themselves in the field for the fact remains that at the present time it is the one and only uncrowded speciality. In consonance with this view are the remarks made by Ralph W. Jackson, M.D., F.A.C.S., in his presidential address before the American Proctologic Society. "Obviously proctology is the great underworked field of specialism of the present day." "Any one of the cities of fifty to one hundred and fifty thousand could well support one (a proctologist) and even lesser and more remote communities which are important business and railroad centres, could do the same. They draw from their tributary territory patients seeking first class advice in surgery, medicine and the other specialties, and why not proctology? I believe that I have underdrawn rather than overdrawn the opportunities these cities offer, and that they are beckoning for at least as many, and perhaps more, men than I have suggested to grasp them."

There are, of course, reasons for this sparsity of attention which has been accorded the specialty by the medical profession. Chief among these is the fact that proctology is the latest branch of medicine to emerge from the low state of development which characterized the practice of medicine some fifty years ago. This statement does not impugn the sincerity nor the relative ability of these early practitioners but merely seeks to call attention to the fact that medicine in the nineteenth century was, in this country as elsewhere, a very loosely organized profession which countenanced or tolerated practices which are today sourly frowned upon as quack or illegitimate methods.

Another factor which I believe we must be frank to admit is the unreasoning antagonism of the general surgeon to any of the specialties. The experience of all the specialties has been alike; the nose and throat specialty, the orthopedic specialty and more lately the urological specialty. Each has had to contend with a type of petty selfishness which reveals many of our socalled great surgeons as poor puny mortals whose instinct of selfish greed lies hidden but not smothered under the mantle of greatness. These are the men who try to convince us that it is futile and absurd for any medical man to devote himself exclusively to but one class of disease. Yet if this same "all around specialist," the general surgeon, were to require the fixing of his watch, you may be quite sure he would take it to a jeweler and not a plumber, notwithstanding the fact that both are mechanics. However much we may like the mold of age and revere the dust of tradition, yet if we are at all fair minded, we must admit that the trend of thought and training in our

present day is entirely along the lines of specialization. Surely that doctor who continually sees fifty cases of rectal disease a week or even in a month must be very dull indeed if he does not know more about these diseases than the doctor who sees perhaps a few such cases a year. Indeed if justification of this specializing tendency were necessary we need not look further than the physiology of our own bodies. Here we see how a single cell, the ovum, becomes a mammoth mass of cells, not identical each with one another, but constituted into an organism comprised of many different kinds of specialized cells and cell units which by their efficiency along their particular specialized lines make possible that higher form of functional life, namely, intellect; found in every human being, and used by some.

The medical schools have until lately given little if any attention to the teaching of proctology, and this has been unduly criticized by the proponents of the specialty, yet a little investigation and reflection on the state of medical education will be sufficient to make one aware of the fact that the curriculum of the modern medical school is at best a very crowded affair. This crowded condition is due to the expansion of the fundamental sciences and these certainly should be given precedence over a highly specialized study such as proctology. The special study, therefore, of rectal diseases is one which has come to be considered a purely postgraduate course. This, indeed, is as it should be because there can be no question as to the importance of the basic medical studies. That the medical schools have been very generous may be inferred by a study of Table II. in which it will be seen that in the majority of medical schools listed, instruction in proctology is given as an undergraduate study at the expense of time which might better be used for the basic studies.

Perhaps the chief reason that proctology has lagged in its development, is the fact that it has had no apostle who had sane convictions on the subject, combined with the courage of these convictions. No specialty can expect to evoke much less command the respect of the general medical profession, as long as it tolerates the utterance of medical nonsensities at its scientific meetings. As long as these meetings are replete with weird ideas on pathology, chemistry and ordinary high school physiology, the cause of proctology will suffer. One would hardly think it pos-

TABLE I

RECTAL CLINICS THROUGHOUT THE UNITED STATES

State	*Address*	*Separate or Subdepartment*	*Proctologists on Service*
California	San Francisco Polyclinic and Post-Graduate School, San Francisco, Calif.	Separate	Alfred J. Zobel, M.D.
Florida	Sarasota General Hospital, Sarasota, Fla.	Subdepartment	Jack Halton, M.D.
Indiana	Robert W. Long Hospital, Indianapolis, Ind.	Subdepartment	Alois B. Graham, M.D.
	City Hospital, Indianapolis, Ind.	Separate	Homer H. Wheeler, M.D.
	Indianapolis City Hospital, Indianapolis, Ind.	Subdepartment	Geo. W. Coombs, M.D. Homer H. Wheeler, M.D. Joseph W. Ricketts, M.D.
Kentucky	Louisville City Hospital, Louisville, Ky.	Subdepartment	Granville S. Hanes, M.D. Bernard Asman, M.D.
Maryland	University of Maryland, Baltimore, Md.	Separate	G. Milton Linthicum, M. D.
	Johns Hopkins University (Dispensary) Baltimore, Md.	Subdepartment	Harvey Stone, M.D.
Massachusetts	Carney Hospital, Boston, Mass.	Separate	Ralph W. Jackson, M.D.
	Boston Dispensary, Boston, Mass.	Separate	T. Chittenden Hill, M.D. Wm. A. Rolfe, M.D.
Michigan	Harper Hospital, Detroit, Mich.	Separate	Louis J. Hirschman, M.D.
	St. Mary's Hospital, Detroit, Mich.	Subdepartment	J. G. Corbett, M.D.
Minnesota	Rectal Clinic, Mayo Hospital, Rochester, Minn.	Subdepartment	Louis A. Buie, M.D.
	University of Minnesota, Minneapolis, Minn.	Separate	Walter A. Fansler, M.D.
	Abbott Hospital, Minneapolis, Minn.	Subdepartment	Walter A. Fansler, M.D.
Missouri	City Sanitarium, St. Louis, Mo.	Subdepartment	S. E. Newman, M.D.
	St. Joseph's Hospital, Kansas City, Mo.	Separate	— — — — —
	St. Louis Mullanphy Hospital, St. Louis, Mo.	Separate	E. F. Sheahan, M.D.
	Mullanphy Orphan Asylum, St. Louis, Mo.	Subdepartment	Wm. H. Stauffer, M.D.
Nebraska	Creighton University, Omaha, Neb.	Separate	Louis F. Moon, M.D.
New Jersey	Jersey City General Hospital, Jersey City, N. J.	Subdepartment	David A. Kraker, M.D.
New York	New York Hospital, New York, N. Y.	Separate	Arthur A. Landsman, M.D.
	Community Hospital, New York, N. Y.	Separate	Arthur A. Landsman, M.D.
	St. Bartholomew's Hospital, New York, N. Y.	Separate	Jerome M. Lynch, M.D.
	Jewish Memorial Hospital, New York, N. Y.	Subdepartment	Arthur A. Landsman, M.D.
	Crouse-Irving Hospital, Syracuse, N. Y.	Subdepartment	Edward B. Kaple, M.D.
	University and Bellevue Hospital Medical College, New York, N. Y.	Separate	E. I. Huppert, M.D. J. F. Montague, M.D.
	Buffalo City Hospital, Buffalo, N. Y.	Separate	Descum C. McKenney, M.D.
	Children's Hospital, Buffalo, N. Y.	Separate	Descum C. McKenney, M.D.
	Erie County Hospital, Buffalo, N. Y.	Subdepartment	Descum C. McKenney, M.D.
	Buffalo General Hospital, Buffalo, N. Y.	Subdepartment	.....
	Gouverneur Hospital, New York, N. Y.	Separate	J. F. Saphir, M.D.
	Stuyvesant Polyclinic, New York, N. Y.	Separate	J. F. Saphir, M.D.
	People's Hospital, New York, N. Y.	Subdepartment	.....
	Midtown Hospital, New York, N. Y.		J. F. Montague, M.D.
	Vanderbilt Clinic, New York, N. Y.	Subdepartment	Frank C. Yeomans, M.D.
	City Hospital, Welfare Island, N. Y.	Separate	Frank C. Yeomans, M.D.
	New York Post-Graduate School, New York, N. Y.	Subdepartment	John D. Stewart, M.D.
North Dakota	St. Luke's Hospital, Fargo, N. Dak.	Separate	Geo. A. Carpenter, M.D.
Pennsylvania	Samaritan Hospital, Philadelphia, Pa.	Subdepartment	Harry Z. Hibschman, M.D.
	Polyclinic (Post-Graduate School) University of Pennsylvania, Philadelphia, Pa.	Subdepartment	
	Jefferson Medical College, Philadelphia, Pa.	Separate	J. H. Allen, M.D.
	St. John's Hospital, Pittsburgh, Pa.	Subdepartment	Wm. M. Beach, M.D.
	St. Francis Hospital, Skin and Cancer Foundation, Pittsburgh, Pa.	of Urological	C. C. Machling, M.D.
	Philadelphia Polyclinic Hospital, Philadelphia, Pa.	Surgery	W. Oakley Hermance, M.D.
	Jefferson Medical College Hospital, Philadelphia, Pa.	Separate	.....
	Philadelphia Stomach Hospital, Philadelphia, Pa.	Separate	.....
Vermont	St. Joseph's Orphanage, Burlington, Vt.	Separate	Donly C. Hawley, M.D.
Virginia	Memorial Hospital, Richmond, Va.	Subdepartment	Emmet H. Terrell, M.D.
	St. Phillip's Hospital, Richmond, Va.	Subdepartment	Emmet H. Terrell, M.D.
Washington	St. Joseph's Hospital, Bellingham, Wash.	Subdepartment	Wm. H. Axtell, M.D.
	Municipal Hospital, Seattle, Wash.	Separate	Arthur Crookall, M.D.

Total number of clinics, 52; states represented, 17; separate departments, 25; subdepartments, 27.

TABLE II

POSTGRADUATE COURSES IN PROCTOLOGY THROUGHOUT THE UNITED STATES

State	*Where Given*	*Graduate or Undergraduate*	*Separate or Subdepartment*	*Length of Course*	*Fee*	*Proctologists on Service*
California	San Francisco Polyclinic, San Francisco, Calif.	Graduate	Separate	.....	.....	Alfred J. Zobel, M.D.
	Stanford University, San Francisco, Calif.	Graduate	Separate	.....	.....	Alfred J. Zobel, M.D.
Indiana	University School of Medicine, Indianapolis, Ind.	Undergraduate	Subdepartment	Senior year	No separate fee	Alois B. Graham, M.D.
	Indiana University School of Medicine, Indianapolis, Ind.	Undergraduate	Separate	Four months	No separate fee	Homer H. Wheeler, M.D.
Kentucky	University of Louisville Medical College, Louisville, Ky.	Undergraduate	Separate	Senior year	No separate fee	Granville S. Hanes, M.D.
Maryland	University of Maryland, Baltimore, Md.	Undergraduate	Subdepartment	Senior year	No separate fee	G. Milton Linthicum, M.D.
Massachusetts	Boston Dispensary, Boston, Mass.	Graduate	Separate	Six weeks	$25.00	William A. Rolfe, M.D.
Michigan	Harper Hospital, Detroit, Mich.	Graduate	Separate	One month	$300.00	Louis J. Hirschman, M.D.
	St. Mary's Hospital, Detroit, Mich.	Graduate	Separate	One month	$300.00	J. G. Corbett, M.D.
	Receiving Hospital, Detroit, Mich.	Graduate	Separate	One month	$300.00	Louis J. Hirschman, M.D.
Minnesota	University of Minnesota, Minneapolis, Minn.	Undergraduate	Subdepartment	Senior year	No separate fee	
Missouri	Washington University, St. Louis, Mo.	Undergraduate	Separate	Senior year	No separate fee	Walter A. Fansler, M.D.
Nebraska	Creighton University, Omaha, Nebr.	Undergraduate	Separate	Senior year	No separate fee	Louis E. Moon, M.D.
New York	University of Buffalo, Buffalo, N. Y.	Undergraduate	Separate	Senior year	$250.00	Descum C. McKenney, M.D.
	Columbia University, New York	Graduate	Subdepartment	Six weeks	No separate fee	Arthur A. Landsman, M.D.
	Motion Picture Course in Proctology	Graduate	Personal	Two weeks	$150.00	J. F. Montague, M.D.
	New York Post Graduate School, New York, N. Y.	Graduate	Separate	Six weeks	$75.00	John D. Stewart, M.D.
	New York University, Medical School, New York, N. Y.	Undergraduate	Subdepartment	Senior year	No separate fee	E. I. Huppert, M.D. J. F. Montague, M.D.
Pennsylvania	University of Pennsylvania Post-Graduate School, Philadelphia, Pa.	Graduate	Subdepartment	Six months	.....	W. Oakley Hermance, M.D.
	University of Pittsburgh Medical School, Pittsburgh, Pa.	Undergraduate	Separate	Six months	No separate fee	Curtis C. Mechling, M.D.
	Temple University, Philadelphia, Pa.	Undergraduate	Separate	Five months	No separate fee	Harry Z. Hibschman, M.D.
	University of Pennsylvania Medical School, Philadelphia, Pa.	Undergraduate	Separate	Senior year	No separate fee	Collier F. Martin, M.D.
	St. John's General Hospital, Pittsburgh, Pa.	Graduate	Subdepartment	.....	.....	William Beach, M.D.
Virginia	Medical College of Virginia, Richmond, Va.	Undergraduate	Separate	Senior year	No separate fee	Emmet H. Terrell, M.D.

The author will be glad to correct omissions or errors in a future article.

Total number of clinics, 23; states represented, 12; graduate, 10; undergraduate, 13.

sible to hear one of the acknowledged leaders in the field cast doubt on the etiology of syphilis, to hear it said that suger is excreted through the sweat glands, or to hear equally fantastic statements made in regard to bacteriology. Truly the specialty needs a man who will tell the truth even if he gets hurt for doing it.

Despite, however, all the handicap which the above mentioned situations create, it will be noted that the specialty has grown both in size and in popular favor. Thus in conjunction with gastroenterology proctology was granted a special section in the American Medical Association as far back as in 1916. The American College of Surgeons now admits to its ranks Fellows who devote themselves entirely to rectal surgery. Numerous books on the specialty have been written by men who devote their entire practice to these diseases. Fifty-two special rectal clinics exist throughout the United States and the subject is taught in twenty-three grade A medical colleges. With these facts fresh in mind we can certainly agree with the book reviewer of *Surgery, Gynecology and Obstetrics* in his comment, "There seems to have been quite an impetus given to the study of the diseases of the rectum and colon in the recent past." For the information of those interested as well as for the sake of substantiating my statements made in previous paragraphs, I submit herewith two tables showing the location and some incidental data relative to the various rectal clinics and opportunities for the study of rectal diseases in the United States.

The accompanying tables are admittedly very incomplete, but it is by far the most complete compilation available at this time. Indeed, it is the only such collection of information. It is to be hoped that those readers who are possessed of information lacking in the data submitted herewith, will be kind enough to send in such additional data for the future revision of the statistics here presented. Much of the information given in these tables has been obtained from the members of the American Proctologic Society during the two years I was secretary treasurer of that society and for their cooperation I am deeply grateful.

The data presented in the accompanying tables may be briefly summarized as follows: There are in the United States fifty-two clinics devoted to the treatment and study of rectal diseases; these clinics are widely distributed throughout the states, seventeen different states being represented in Table I. Nearly half of these clinics are conducted as distinctly specialized departments; in the remainder the department is a subdepartment of general surgery. From this fact I believe that we are justified in drawing the inference that proctology is receiving an increasing recognition as a specialty. This conclusion appears to be supported by the fact that of the twenty-three proctological courses (Table II) being offered throughout the country over half of them are being given to undergraduates in their senior year.

I have left for final mention what I consider the most important reason for the slow spread of knowledge on the subject of rectal diseases. I believe this reason to be that no attempt has been made to improve our methods of teaching this subject. I, personally, have made such an attempt and it has proved very successful in my hands. I have no doubt that when petty pride and prejudice have dwindled to the extent of allowing others in this field to imitate me, it will

be found equally advantageous by them. My method of teaching is extremely simple, practical and yet complete.

To explain the working of this method let us take the viewpoint of a physician who, because of the rigors of general practice, has decided to do more efficient work along one special line and at the same time get more out of life. The most logical thing for him to do would be to visit the clinics of men who are giving special attention to rectal diseases. Naturally he would come to New York because of the unequalled clinical facilities and the number of special clinics held here. He would journey from one clinic to another seeing what cases happened to come in; perhaps seeing many cases of the same type within the same few days but it would be quite obvious, even to a beginner, that such a method of study is, to say the least, haphazard. It is quite as likely to remain in your mind as a mass of vague impressions, because of the unsystematic manner in which these impressions were obtained. Not only is every impression but fleeting and superficial, but the total of these impressions is not of impressive value in thorough study. The area under examination is, at best, but six inches square and when this is encroached upon by the presence of operating hands and instruments, one cannot reasonably expect very much view at the distance required by a seat in the amphitheatre of an operating room.

With these facts in mind and with an infinite faith in the future of the study of proctology, I planned a very definite series of lectures to cover the entire subject of proctology. Were this all that I could offer, no advance would be made over existing teaching methods. There would still be the great drawback that students object to, that of being "talked at," rather than shown. In order to show the conditions of rectal diseases both in the gross and microscopically, as well as to demonstrate in detail every phase of treatment, I conceived and produced an entire series of motion picture films aggregating 55,000 feet of film. When these pictures are thrown on the screen, the perianal region is seen as an area nine by twelve feet in size. Accurate observation of the conditions portrayed is not only possible, but, in truth, cannot be avoided. Explanatory animated drawings supplement a showing of the actual condition. Finally, motion pictures of the operation on an actual living subject are shown and the treatment summarized and tabulated.

This procedure is followed in the subjects outlined below and is supplemented by personal explanatory talks whenever students desire them. A brief outline of what is offered is shown herewith:

BASIC PROCTOLOGY (INTENSIVE COURSE)

1. Anatomy and physiology of the rectum and anus.
   Dissections of pelvis, perineum, rectum and anus supplemented by animated charts and diagrams.
2. Methods of examination and instruments used.
   Demonstration of diagnostic methods, and of instruments in current use among proctologists. Moving pictures.
3. Rectal and anal abscesses.
   Varieties, appearances, diagnosis and treatment illustrated by animated diagrams and operations illustrated by moving pictures. Simple evacuation, procedure in tuberculous cases, scalping operation for abscess, etc.
4. Anal and rectal fistulæ.
   Relation to abscesses, diagrammatic explanation by moving pictures—treatment; operative, injection with pastes, dressing of wounds, cases, healed wounds, etc.
5. Fissure in ano.
   Descriptive moving pictures, appearances, cases, diagnosis, treatment: transcision, excision operation, subinjection methods, etc.
6. Hemorrhoids.
   Cases, classification, method of treatment explained and illustrated by motion pictures; ligature operation, clamp and cautery operation, injection methods, radium seed method, etc., histological study.
7. Pruritus ani.
   A thorough study of the causes, the tissue changes and the adequate treatment of cases demonstrated and explained by moving pictures, animated diagrams and moving picture microphotographs.

ADVANCED PROCTOLOGY (INTENSIVE COURSE)

1. Embryology and malformations of the rectum and anus.
   Practical applications of the embryology of the rectum to the explanation of malformations. Explained by animation.
2. Prolapse of the rectum.
   Cases, symptoms and the pathology of the condition. Explanation of the cause and mode of production of prolapse. Moving pictures. Treatment.
3. Cancer of the rectum.
   Histological study, operative methods of treatment, excision of the rectum; treatment by radiation and by radium. Moving pictures, photomicrographs.
4. Referred pains of rectal origin.
   Practical importance of rectal conditions causing misreferred pains. Explanation of certain cases of backache, lumbago, sciatica, etc.
5. Stricture of the rectum.
   Causation, histological study, effective treatment. Operative methods — proctotomy, dilatation. Carbon dioxide snow method of treatment. Moving pictures.
6. Miscellaneous rectal ailments.
   Cryptitis, papillitis, incontinence, etc.
7. Anesthesia in rectal operations.
   Demonstrations, discussion of relative value of general anesthetics, local anesthetics and the method of sacral and spinal anesthesia. Moving pictures.
8. Rectal surgery abroad.
   Hospitals abroad, proctologists abroad and methods used. Some miscellaneous notes on the successful practice of ethical proctology.

I trust the statistics and information submitted in this article will be found of value to those seeking information on rectal clinics, courses in proctology and the status of the specialty of proctology in America.

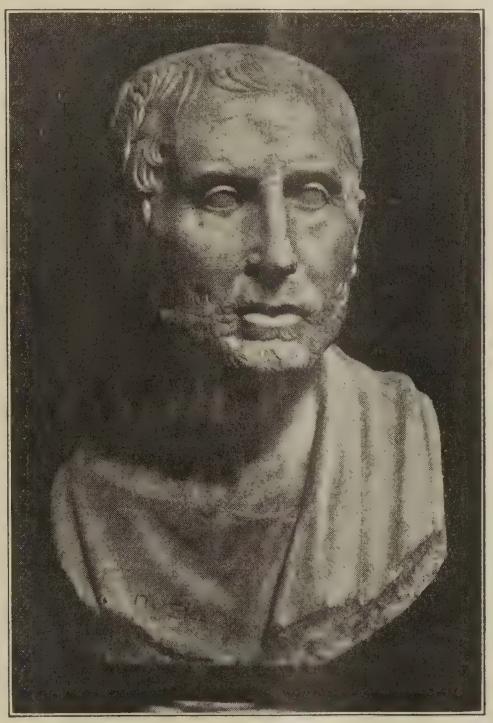
Historical Medicine

The Legacy of Greece to Galen

III: *Its Utilization*

JONATHAN WRIGHT, M.D.,
Pleasantville, N. Y.

In the previous papers of this series in a very general way we have been concerned with the antecedent material on which Galen built his superstructure of experiment and theory, the roots of his anatomy and physiology nourished in the soil of Greece and watered by the genius of its philosophers half a thousand years before him. In his book on the dogmas of Hippocrates and Plato (1a) we gathered something he had to say about them, but there, too, we catch him at his task dispelling the mists of the centuries while revering the prophets and paying tribute, not always respectful, to Aristotle. Hippocrates was perfect as far as he went, but Galen with a sort of Asiatic obsequiousness and suppleness before an idol, carried him further in the direction he thought he ought to go than the physician of Cos ever intended to go, perhaps somewhat as Plato did Socrates. Plato left Socrates to us an incomparably lovable figure, a mighty monument in philosophical thought, and Galen only in a less striking and complete way did much the same to Hippocrates. He often pays honorable tribute to Aristotle, whom he however often refutes. He never mentions Hippocrates but to praise him. Yet I can never avoid thinking of Galen rather than of Hippocrates as the outstanding figure of the beginning of modern medicine. Hippocrates seems to fuse into Æsculapius as the hero of a bygone day. His mind has a clarity we do not always observe in Galen and Galen frequently grovels on the earth before a current superstition or an ikon of his own making. Hippocrates never does, but he is distinctly a figure of the past, a legacy of Greece it is true, but a legacy nevertheless. Galen (1b) refers to Plato in the *Timaeus* establishing the hypothesis or accepting it of a single primordial substance or matter (Stoicheion), a common element into which all the others could change, and refers also to Thales, Anaximines, Anaximander and Heraclitus selecting a different element for it. They all seem to dream of a common element, but it is of the one whose phenomena of changes of form have struck each one most impressively. They contradict rather than support one another and no one of them is convincing. Whatever Galen may think this is something which impresses us agape before another kind of monism.



Poseidonius, Naples, National Museum (*after Hekler*)

Into this we have already penetrated in a shallow manner, but sufficiently. The qualities of matter, however, are more intimately associated with medical thought, especially clinical medicine, for it is by virtue of the qualities that we make our diagnosis. Heat it is true qualifies other matter but when it qualifies the animal body we are interested. There were those who insisted the senses not only took cognizance alone of the qualities, but that was all there was to it. There was no reality in the way of matter. Of course Galen rejects this, but he seems to regard this as scarcely more outrageous than asserting that the elements have no qualities (1c). He thinks he has shown there are elements of matter four in number and no more and four qualities only, or at least nothing but those designated by insensate homonyms and he desires the reader to make no mistake about that however much he may relate the belief of others. An element is an element whether isolated or not and it is always the same. Qualities are different, there may be more or less of the hot or the moist. Fire, however, was a stumbling block. There was air and earth and water, but fire was the hottest heat, Galen had to admit. Here an element surely seemed to merge into a quality, just as energy and motion seem to merge into matter much to our own confusion. However he was not disposed to consider water as the wettest wet. Water and earth could not be denied existence, but why was fire anything but the hot? This sort of a quandary Athenæus put him into when he was only nineteen. It was up to him to admit heat was as much of an element as a hot bath. It bothered him very much then, but he apparently learned to bluff later on. "It is not up to me to clear up your sophisms. Clear them up yourselves." But further on in order to get rid of the conception of matter as without attributes there seems an endeavor to share the argument of Athenæus that the element and the quality or the combinations of qualities are all one whole. This seems to shelve the idea of one underlying element, a fundamental monism, but it leaves us in doubt

how Galen is going to get along with this conception in his humoral doctrines. At least we only know matter by its attributes. That seems clear to us. On the whole Galen thinks this preposterous, at least that we can take nothing out of a body without putting something in the place of it and he seems to us to be getting deeper in the mire, having rejected the idea of one primordial element, when he says (1d) or seems to me to say: "Air, fire, water and earth do not have their origin in other bodies, but from the whole (or matter?) and the qualities." If this is not a sophism, it seems something still more absurd and we must leave him to clear it up and turn from this rather unprofitable supplement to my former essays to understand his elementary principles and plunge into matters of more immediate medical interest.

We find him in the midst of it at the point (1a) where I digressed to former interests. He quotes from Nicander the idea of the view that cardialgia was an affection of the heart, but far back of Nicander we could find traces of the belief that not only drink but food passed into the heart when "the heart" vaguely meant the belly. He insisted that physicians wrongly interpret the word as indicating that the symptom has its origin in the heart. He says all the symptoms point to the orifice of the stomach and cardialgia is a misnomer, but we soon get on the track of the notion of Aristotle and many others that the heart is the seat of thought. Galen hesitates at the palpitation of the heart arising from fear, but if it is so this doctrine is not due to the Peripatetics and the Stoics but to Hippocrates and Plato. He is quite sure any movement of the soul is due to the action of the mind and the mind is not located in the heart. "It is not as Aristotle and Chrysippus but as Hippocrates and Plato teach." The beginning of our impulse to voluntary motion is in the brain, but certain other and involuntary motions have their origin from the heart. We see then that however well he knew the share the afferent and efferent nerves had in the mechanism of motion, he recognized there were other nerve actions which might originate elsewhere. Reflex action and its congeners, if they must insist upon it, can not be attributed to the brain. Here is the faint germ of the perception of a sympathetic nervous system separated from that of the brain and its immediate appendages and it was far into modern times before we did much more.

This might well have resulted from the series of experimental observations upon animals narrated by Galen as to nerve currents and blood currents, but the neatness and completeness of his accounts rather argue that some at least of the original work did not originate with him but before him. Into the details of this I of course can not here go, but I have referred to it elsewhere on several occasions in comments on other treatises of Galen, where it is more fully set forth. In this connection though I may advert to the high opinion Galen had of the anatomical knowledge of Hippocrates and the Asclepiades, higher than he gives any specific proof of. The work on the veins in *The Nature of Man* has been acknowledged even by him not to be a genuine treatise and Aristotle quotes it in the *History of Animals* from Polybus, a son in law of Hippocrates, but Galen and others before him, he says, think (1e) that part of it was written by neither. Why Hippocrates should be quoted by him as an authority for the origin of the veins from the liver and why Galen gently chides (1f) Plato for not following Hippocrates elsewhere in the *Nature of Man,* is explicable only on the view that independently of this Galen had a very high opinion of the anatomical knowledge of Hippocrates and somewhere he also refers to the training the sons of the Asclepiades got in anatomy from their preceptors. It is a little strange that such high value should be placed on the anatomical learning of Ancient Greece by such an anatomist as Galen in the second century A.D., who says that not only he alone, but other anatomists, in fact all, have shown the nerve supply originating from the spinal cord and that from the brain. Such anatomy as we have any knowledge of the Greeks' possessing in the time of Hippocrates might well move the contempt of the school of Alexandria at that date and incite such a critic as Galen to the vivid expression of it. Either these ancient Greeks possessed far greater anatomical knowledge than we know of or it is a most striking example of reverence in Galen, the man of vituperation, for the Master.

Elsewhere Galen says Herophilus and Eudemus, living more than a hundred years after the death of Plato, first clearly differentiated the nerves. Then in his ardor to give Hippocrates more than his due and at the expense of casting a shadow on his other idol—Plato—he exhibits self contradiction if he does not consciously misinterpret facts for the strengthening of his argument, but it needed only the breath of a tradition for Galen to ascribe wisdom to the former. I have alluded to his vacillation about some of the phenomena of the sympathetic nervous system. The heart indeed palpitates with fear and with love as Hippocrates understood in the story of Prince Perdiccas in love with his stepmother, a tale even then also told of Erasistratus and some princely patient of his. It seems to us in view of what he says about cardialgia that he places the cardiac evidence of these emotions in the same class. Objects first cognized by sense—of sight, hearing—exciting love or hate or fear— and a more rapid heart beat do not seem even to us, knowing so much more, to go very well with heart burn from a sour stomach. On placing them on a level it is no wonder Galen falters. Perhaps, he seems to think, emotion is motion of the heart primarily, but the exciting cause being first perceived by the reasoning faculties and the nerves of sense which feed them with cognition in the brain must have staggered him and the opinion of Hippocrates only kept him in error, but he evidently was in doubt too. Aristotle was in greater error and less doubt. He believed we thought with the heart and the blood. As a matter of fact Plato was leaning far nearer the truth with his tripartite soul. He was striving toward a theory to cover all the facts. If he knew anything of the cerebral nerves we have no clear evidence of it, but the brain was the seat of cognition and reason, the heart that of the generous passions, the liver of the evil, and the blood played the part of the nerves. The brain was the acropolis where Athena dwelt, the temple of emotion was in the heart and the seat of lust in the liver below the diaphragm.

We follow the flitting of these thoughts and they do not leave us altogether cold and they evidently moved the thought of Galen much more deeply.

Eventually Galen's work on the nerves and that of his predecessors banished these things from anatomy, but it was not until the sympathetic nervous system found a place in it that physiology passed from under a cloud and it is not all plain sailing yet. Here in this book on the dogmas of Hippocrates and Plato Galen reviews the evidence, elsewhere exposed in detail, of the origin of all the nerves in the head and brain and makes it a parallel with the arteries starting from the heart, the veins from the liver, and we see the thought of Plato's tripartite soul supporting the parallel in his mind. They were distinct in function in the government of the body. There was no interchange of function. Pressure on the brain paralyzes, but the heart beats on. Pressure on the heart does not paralyze movement or volition. Not as others, on argument and high flown theory, Galen boasts his opinion based on experiment and observation. In other words, he makes the same reproach and with more reason on the work of his predecessors by four or five hundred years as Vesalius and his followers cast on Galen, but far more than he knew he was in thrall to the legacy he had from Plato. It is apparent there was call for acute analysis to ascertain an exact nomenclature to fix the thought of the beginning of emotion in the arrival at the brain of the image exciting it. The "soul" no longer sufficed and the still mystic appellation of the consciousness had not arrived.

Some one of the Peripatetics, according to Galen (1g), suddenly appeared saying the emotions are carried up from the heart, where we infer he thought they began, to the brain by certain membranes stretching between them. For this opinion possibly Aristotle was not responsible, but it indicates the influence of the theory of an abstract something requiring a lodging place, countenanced by his indicating the heart as the source of emotion. This no doubt retarded the acceptation of the nerves as the channels of impulse to action from the brain and as the paths of external impressions. Poseidonius, whom Galen calls the most learned of the Stoics, repudiated much of the doctrine which went to such extreme lengths in the works of Chrysippus, two hundred years after Herophilus, in the time of Ptolemy 1st (300 B. C.), had demonstrated the difference between nerves and fibrous structures. Poseidonius was an older contemporary of Pompey and Cicero, the latter of whom often speaks of him with great respect. Nevertheless he still upheld (1h) the tripartite soul of Plato and apparently believed in augury when the augurs themselves had long since begun to smile at it. In the wording of Plato he speaks of these souls as the seats of important powers, but we find Galen two hundred years later practically only recognizing the brain, heart and liver as organs in which important physiological actions were located, the "secretion of thought," the mixing of the pneuma with the blood and the sifting out of the secretions. It is thus we mark the advance of thought and it was a great step forward and we find it in Galen first swinging into line with modern medicine. Galen then was profoundly influenced by Platonic thought and though guided by it he was yet veering in the right direction.

Although Galen is never disposed to neglect this Platonic tenet and keeps in view the pneumatic theory, one of his greatest services to physiology was his repeated denial of the claim of Erasistratus that the arteries contain only the air and the pneuma in it and this denial he supported by the most convincing experiments, but out of that conception of the pneuma, supported by the observation of the change of the color, the oxygenation of the blood in the lungs, another fundamental principle of modern physiology, got its start. Why the discovery of the true course of the circulating blood had to wait fifteen hundred years, despite the legacy of Greece as it was multiplied by Galen, is to be sought in the wider study of the history of cosmic events. The discovery of the cardiac valves has been ascribed to Erasistratus, but some historians seem to doubt if he did more than describe the chordæ tendinæ. That would indicate the auriculoventricular valves only, but it is difficult not to recognize in the reference (1i) of Galen, that he noted the others. Whatever his idea was perhaps he needed them as much for the circulation of the pneuma as Galen did for the circulation of the blood, but we may end here with the remark of Galen correcting Aristotle: "It is *not* because the arteries are filled with pneuma that they are dilated and throb."

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Guaca Digging

WILLIAM COLBY RUCKER, M.D.,

New Orleans, La.

Guaco is a Spanish word which came into use after the discovery of America. Probably it was a native word picked up by the *Conquistadores* in much the same way as we of North America incorporated succotash, hominy and pemmican into our dialect. Be this as it may, *guaco* throughout Latin America means a grave, more particularly an ancient pre-Columbian burial place and the feminine, *guaca* means anything found in such a grave.

It may seem at first glance that ancient graves and their contents are very remote from the field of medicine; that the archeologist may receive a thrill from grubbing up the sepulchers of a forgotten people but that graves, even though they are prehistoric, would be of small interest to the medical man. There is a great thrill when one holds in his hand a golden ornament, a beautiful pot or a stone chisel which no other hand has touched for perhaps

a thousand years. *Guaca* digging is a wonderful sport in that it is a wonderful stimulant to the imagination. One pictures the crowd of mourners reverently laying to rest the body of some chieftain wrapped in mantles of feathers and skins: his weapons, pots containing food and his choicest ornaments are placed beside that still body ready for the long journey; stones are swung into place: the earth is filled in while the medicine man chants charms to speed the traveller on his way; some nearby rock perhaps is marked with hieroglyphs looking like a rude sketch map. Then you come hundreds of years later to find that no trace of the body remains and only gold ornaments and baked clay are left to show where once a man went over the horizon's rim.

In Central and South America there are many large collections of graves. Usually they are discovered quite by accident but occasionally there is a marked stone in the center of the cemetery. Costa Rica and the western provinces of Panama have many of these burial places and as they are not protected, it is usually easy to prospect for *guacas,* in fact, many natives open graves as a side line in the hope of finding gold in them.

Little is required in the way of equipment, a crowbar, a shovel, an inevitable machete and a good stout native who will dig all day for a dollar gold, being all that is necessary. In looking for grave sites the *mozo* can usually tell about where to commence the search. Usually they are somewhere near big flat stones into which spirals, whirls and running figures have been cut. Having located on a likely spot, the *mozo* begins thrusting the crowbar into the earth until a stone is struck from six inches to a foot beneath the surface of the ground. From this as a starting point, the crowbar works radially in every direction until a rectangular layer of stones has been mapped out. Usually this area is about three feet wide and seven or eight feet long. Having marked the corners, the earth is removed until a layer of flat stones is exposed. As a rule, especially in the Chiriqui country around Boquete Bajo, these are flat water worn stones. These are removed and a trench is sunk. About three feet further down, a row of stones is struck on one side of the trench. As the excavation continues, these become more and more apparent and it is seen that these are good sized stones standing on end and chinked at the top with small flat stones. These should be left in place until the digging has been completed, i. e., until the bottom of the lateral stones has been reached. These stones are about fifteen or sixteen inches long and are more or less triangular on cross-section being about five or six inches on a side. Behind them is the grave itself. In the Chiriqui, the bottom of the grave is a rather hard white stone, a natural layer, called locally volcanic concrete.

The chinking stones are carefully removed and one by one the bigger rocks are gotten out. Behind them is then seen a little cave, strangely reminiscent of a lower berth on a Pullman. In the bottom of it is a layer of moist earth from three to six inches deep. Using the hands, this is now scraped out with the greatest care. Every bit of it must be searched because sometimes the gold *guacas* are not any larger than a pea. In a moment a pot is felt. The earth is carefully removed from around it and with greatest care it is lifted out and set in the sun to dry when it may be handled with less danger of breakage. Little burnt clay figures two or three inches in height, whistles shaped like birds, figures of animals, stone tools, jade beads and amulets are frequently found but of human remains not a vestige, not even a tooth, is encountered.

The study of the *guacas* removed from these ancient graves is intensely interesting and serves to throw considerable light on the customs and beliefs of the forgotten, nameless people who buried them. Many of them show a considerable advance in art and craftsmanship and the amount of gold and copper found indicates that mining in these metals was fairly common. The presence of jadite which came from Mexico and turquoise which came from the ancient mines in New Mexico in a tomb in Panama warrants the presumption that at that remote time there existed a commerce which extended from the continental United States into Panama.

Gold *guacas* exhibit a wide variety of shape, size and design. Crocodiles and jaguars from one half to one inch in length, human figures from one to three inches in height, fish, eagles, frogs from one to six inches long, beautifully chased breast plates shaped like eagles or circular like those found in the ancient Irish and Norse tombs, armlets, legbands and a great variety of other pieces of jewelry are found. Bells exactly the shape of the old fashioned sleigh bell and varying in size from a small marble to a goose egg are not infrequently met. For the most part the gold is the softest, virgin, yellow gold but sometimes it is alloyed with copper or has a base of copper over which a thin layer of gold has been spread. It has been held that these latter were of Spanish manufacture and were traded by unscrupulous *Conquistadores* for articles of virgin gold. On the other hand, alloyed and plated bells have been found in graves which are apparently as old as those by which they are surrounded. All of the gold *guacas* are well modelled. Sometimes the figures of birds are conventionalized, usually the frog, crocodile, jaguar and human figurines follow nature fairly closely. The socalled slave or captive *guacas* show a human figure attired in a loin cloth and headdress or possibly a crown and bound by ropes to a pillar on either side. Sometimes there are two figures and three pillars. The detail is exquisite.

The objects of burnt clay consist largely of bowls and pots of various sizes. Some of the bowls have a handle; many of the pots have two little protuberences, apparently designed to prevent the lifting fingers from slipping. Generally, the pot is ornamented with the whole or part of some animal or fish. It is thought that these perhaps represent some object of worship. The armadillo in whole or in part, conventionalized or natural, is frequently depicted on this pottery. Sharks and crocodiles are also used and in the bisque pottery, the monkey with a ceremonial bar across his arms is almost always found. These monkeys have their hands over their ears, mouths or eyes exactly like the "hear no evil, speak no evil, see no evil" specimens so often seen in the Chinese curio shops. Pots have round bottoms or stand on three legs or an open work ring of clay. The legs are commonly hollow and contain a little bell of baked clay. They represent shovel nosed

sharks, armadillo heads and other animal life or they may be simply ornamented with a row of holes and little line border. Water jars have a relatively small opening (some have two) standing on a constricted neck. Cooking dishes have wide mouths, some being broad and shallow, others narrowed and deeper. Many are ornamented with red, black or green pigment in designs showing twined serpents, conventionalized crocodile heads and triangles containing a number of round dots. Sometimes stone vessels and vases are found, also stone seats. In certain situations all clay vessels found have holes punched in the bottom. This is believed to have been part of the funeral rites.

The burnt clay figurines are especially interesting and there is a splendid collection in the National Museum at San José, Costa Rica. From them may be obtained considerable information of these ancient peoples. Some of these are decorated in colors and pierced, evidently to admit of the passage of a string so that they may be worn suspended from the neck. Once in a while a figure represents some deformity, for example, at Cartago, C. R., I saw a figurine of a hunchback. The spinal curvature was probably due to an accidental fracture of one or more vertebræ, since tuberculosis, the usual cause of such deformities, is not believed to have been a pre-Columbian disease. Not infrequently the pottery whistles are made in human form, frequently showing some disease condition. Perhaps these were used by the medicine men in their curative incantations. One of the most interesting of these whistles which was found represents a woman in the act of parturition. It is remarkably well modelled and the face expresses, with considerable fidelity, the pain which she is undergoing. Along the sides are several holes. These are evidently arranged for the fingers, so that different notes may be blown on the whistle. It is not inconceivable that this was used by the medicine man as a part of his incantation during labor. There is a collection of these figurines at the National Museum at San José. Study of these might throw considerable light on the medical practices of these primitive people.

The material used in making clay *guacas* varies from dark to light red and dark slate to biscuit color. Of the pots, the most beautiful lines are seen in the bisque ware which exhibit as great skill as if made with a potter's wheel. Some of the tripods compare favorably in line and design with the ancient Grecian vases. The surface finish varies from the somewhat rough bisque to the very smooth of the deep red objects. Some of the figurines seem to have been coated with some sort of a glaze.

A Sixteenth Century Precursor of Alexis St. Martin

CHARLES GREENE CUMSTON, M.D.
Geneva, Switzerland.

Matthew Cornax, in his book entitled *Medicæ Consultationis apud Aegrotos Secundum Artem et Experientiam Salubriter Instituendæ Enchiridion,* published at Bale in 1564, relates an interesting case of gastric fistula which I will briefly summarize.

A peasant of Bohemia being out hunting was accidentally hit by a pointed stake in the region of the stomach, giving rise to a very large wound. The patient's condition was regarded as fatal because to all appearance the wound could not be closed by any known means. Yet contrary to the prognosis of the attending physicians, the edges of the wound became hardened to such a degree that the rustic was able to pack the gastric wound with lint with such skill that whenever he wanted he could clean out his stomach through the opening into the viscus, withdrawing the juices and food contained in it. This man survived a number of years.

A word about Matthew Cornax, as he is little known in medical history. He was born in Romangna, studied medicine at Venice under the famous master Nicholas Massa, and himself taught medicine for some time in that city. Afterwards, this distinguished practitioner was called to the University of Vienna as professor and became physician to the emperor Ferdinand I of Austria.

Cornax also wrote a little work entitled *Historia Quinquiennis Fere Gestationis in Utero, Quoque Modo Infans Semiputridus, Resecta Alvo Exemptus sit, et Mater Curata Evaserit,* Vienna, 1550. It contains an account (as the title indicates) of a successful Cæsarean operation on a woman who for five years had carried her product of conception. This curious case is worthy of notice and we will give a short summary of it.

Margaret, twenty-five years of age, the wife of the landlord of the "Red Crayfish," a tavern in Vienna, had been previously delivered of several children, again became pregnant in the year 1545. She felt fetal movements as usual, but when at term she could not be delivered. She carried the fetus for five years and then the child was expelled into the abdominal cavity, the walls of the uterus having undergone necrosis. A large tumor developed and in consultation, Cornax advised making an incision in the mid-epigastric region. The physicians and surgeons present were unable to believe that the abdominal tumor was produced by a child as the patient had experienced peculiar pain for some time and also because five years had lapsed since she was pregnant.

However, the operation was carried out and a child was removed in such a fair condition of preservation that its sex (a male) could be made out. Recovery was uneventful. In a year the patient again became pregnant and went to term uneventfully, but could not be delivered. Cornax being called, advised the Cæsarean operation, but the patient's mother and other shrews present, would not hear of it, so Cornax and the surgeon who had performed the first operation withdrew. The woman died shortly after and then Cornax and the surgeon were hastily summoned and delivered by abdominal incision a fine male child which would have been extracted living had their advice been followed.

Editorial Articles

THE GENESIS OF GENIUS

We prate much about the sound mind in the sound body, but, if the brain be left out of account, the vigorous mind is about as likely to be housed in a shack as in a mansion. To be more truthful, we would better modify our aphorism to speak of a better mind in a better body, but this does not preclude the frequent finding of a feebler mind in this same stronger mechanism.

A very elaborate study of the mental and physical traits of a thousand gifted children, made by Dr. L. M. Terman and others, has just been issued, and the comparison of the physical characteristics of this group with control children of the same age gives interesting confirmation of the above thesis.

In their "health and physical history" the gifted children excel on the average the unselected in everything except vision, there being more cases of inferior eyesight among the mentally superior. This is in line with the findings of the Russell Sage Foundation in its study of defects of school children in New York City. As the gifted child reads two to three times as many books as does the ordinary child, there would seem to be strong evidence that this excessive use of the eyes for near work is disastrous, for it is not conceivable that poor vision should accompany genius any more than defective hearing or breathing. Those who make much of the effect of mouth breathing on school progress will be surprised to find many mouth breathers among the gifted, though fifty per cent. more cases are found among the control children and three times as many which are "marked" or "extreme."

"In physical growth and in general health the gifted group unquestionably rates on the whole somewhat above par. There is no shred of evidence to support the widespread opinion that typically the intellectually precocious child is weak, undersized, or nervously unstable. In so far as the gifted child departs at all from the average on these traits it is pretty certain in the other direction, but the fact seems to be that his deviation from the norm on physical traits is in most cases very small indeed in comparison with his deviation in intellectual and volitional traits. Even the slight superiority that he enjoys with respect to physical equipment may or may not be due primarily to endowment. It might be accounted for mainly if not entirely by such factors as diet, medical care, and other environmental influences.

"Two possible environmental causes of the intellectual superiority of our gifted group are definitely excluded by the data that have been presented: 1, formal schooling, and 2, parental income. It has been shown that within a given age group, the intelligence and achievement scores earned are totally uncorrelated with length of school attendance. The median family income does not greatly exceed that for the general population of the cities in question. The families of some of our gifted subjects are in financial circumstances below the level of moderate comfort.

"In a majority of cases the superiority of the gifted child is evidenced at a very early age. Among the most commonly mentioned indications are intellectual curiosity, wealth of miscellaneous information, and desire to learn to read. The frequent presence of such traits among our subjects in the preschool period suggests strongly the influence of endowment. Although in a small minority of cases attempts at forced culture may have contributed to the result, it is manifestly impossible to account for the general superiority of the group by any such influence.

"There are, nevertheless, many persons who believe that intelligence quotients can be manufactured to order by the application of suitable methods of training. There are even prominent educators and psychologists who are inclined to regard such a pedagogical feat as within the realm of possibility, and no one knows that it is not. If it is possible it is time we were finding it out. Conclusive evidence as to the extent to which the IQ can be artificially raised could be supplied in a few years by an experiment which would cost a few hundred thousand or at most a few million dollars. The knowledge would probably be worth to humanity a thousand times that amount."

GASTROJEJUNOSTOMY IN GASTRIC AND DUODENAL SURGERY

There has been for some time a considerable amount of discussion and differences of opinion as to the relative merits of the methods of surgical treatment of gastric and duodenal ulcers. Some surgeons advocate radical operations for these forms of disease and other surgeons pin their faith to less severe operative procedures, while all seem to be agreed, surgeons at any rate, that in chronic serious cases of these disorders, the best hope for recovery lies in surgery. Of the well known surgeons who have had extensive experience in the treatment of these ulcers, Mr. Herbert J. Paterson, senior surgeon of the London Temperance Hospital, has adhered always to gastrojejunostomy for the cure or relief

of these conditions. At the recent meeting of the British Medical Association he read a paper on the subject, in which he reviews the situation thoroughly and states that in his opinion it is time that a stand be made against operations which are unnecessarily severe, and he contends that in the great majority of cases gastrojejunostomy is a thoroughly satisfactory treatment both for gastric and duodenal ulcers provided it is performed properly and that prolonged and efficient aftertreatment is carried out.

He holds that the claims made for partial gastrectomy, that it is a more certain cure, will not bear a close analysis. The mortality rate is higher than that of jejunostomy and although in the hands of a few experts the death rate from it does not much exceed the death rate of gastrojejunostomy few will be prepared to deny that it is a more severe operation with a necessarily higher mortality.

Paterson combats strongly the allegation that some sixty per cent. of chronic ulcers show malignant changes, which is one of the strongest reasons advanced for their complete removal. He is inclined rather to attribute the occurrence of gastric ulcer to intestinal stasis rather than to gastric ulcer. He argues that if it be true that sixty to seventy per cent. of chronic ulcers are, or become malignant, then it follows that often gastrojejunostomy must be performed for ulcers which are believed to be innocent but which are really malignant. Consequently a large number of these patients should die subsequently from gastric cancer. It is known, however, that this is not the case. Statistics say that the proportion of those who die from carcinoma after gastrojejunostomy for supposed simple ulcer is about two per cent. The most conclusive evidence against the supposition that gastric ulcer is frequently of a cancerous nature is that patients seldom die from gastric cancer after gastrojejunostomy for a presumably simple ulcer. Therefore, the logical deduction is either that the ulcers are rarely malignant or that gastrojejunostomy cures them. Therefore those who claim that gastric ulcers become frequently cancerous are on the horns of a dilemma.

Figures are quoted showing the results of Paterson's gastrojejunostomy operations from 1913 to 1923. These are most satisfactory.

So far as gastric ulcers are concerned, the author insists that gastrojejunostomy is the operation of choice for all cases of gastric ulcer except those in which there is a more or less strong suspicion that the ulcer is cancerous. And with regard to duodenal ulcers, Paterson states that there is no question that success can be attained by gastrojejunostomy in over ninety per cent. of the cases of duodenal ulcer, and consequently duodenectomy is a totally unnecessary operation.

The contraindications to gastrojejunostomy are that it should never be performed except when there exists an ulcer which can be seen and felt. It should never be done on a clinical diagnosis, however clear and definite the symptoms, and lastly, it should be borne in mind that gastrojejunostomy will not cure tabes dorsalis, migraine, gallstones or cancer of the intestine. Neither will the operation give good results if a gallstone or a diseased appendix be left in the abdomen. The importance of after care of the operation is emphasized.

Paterson twits Sir Berkeley Moynihan, the great advocate of gastrectomy, with his change of view. Not long ago Moynihan extolled gastrojejunostomy in glowing terms and Paterson quotes his words to this effect. He bases his belief in gastrojejunostomy mainly because it is a physiological procedure and because by his success with it he has proved it to be so. The paper is highly informative and deserves to be read closely by the medical profession.

PHYSICAL AND MENTAL HEALTH

"She suffered from bodily weakness the greater part of her life and but for an extraordinary mental health—inherited from the fine yeoman stock from which she sprang—it is impossible that she could have retained, at all times, so sane a view of human conduct or been the least sentimental among women writers of the first rank—the one wholly without morbidity in any disguise." So writes a biographer of George Eliot, and it is worth while to pause over this statement in a period when many of us are in the custom of ringing the changes on that old Greek phrase—a sound mind in a sound body, as if only physical athletes and only persons with sound livers or lights could produce great works in literature or art.

George Eliot suffered severe headaches of we know not what origin, though some modern clinician would point to a misbehaving pituitary as the source of the disturbance. Possibly, also, he would be silly enough to go more afield and attribute her genius in literature to the undue activity of this same gland or one of its colleagues of the endocrine series.

As for livers and lights, some of the most brilliant feats of genius have been conceived and executed with men in the last stages of consumption or of hepatitis, and, though it is astonishing that the brain should have functioned so marvellously under the circumstances, such has been the case. Possibly these seers saw deeper for their nearness to eternity, and yet very great works have been produced by the healthy and robust in the height of health, as exemplified in poetry by Robert Browning, in painting by Sargent, in music by Brahms.

Nevertheless there is some relationship between

good health and good mentality. As Karl Pearson says, "While health and intelligence are not highly correlated," and while "Nature selects for physique and she selects for intelligence . . . where the physical machine is not of the highest order, there the mental machine will, on the average, run less smoothly, although by no means in complete accord."

If George Eliot had prostrating headaches, she was far from being physically weak. D. H. Banner, in an article on Sargent in the *Nineteenth Century,* would have us believe that "where actual weakness exists no greatness is possible." "Few realize," he continues, "how immense is the effort demanded by artistic creation." The daily effort put forth by a genius of the first distinction "is of a kind and of a degree which an ordinary man (even if he could be imagined to make it at all) would only make it at the cost of his life. It would shatter his body and burst his brain. Men have spoken of the delicacy of Chopin and (save the mark!) of Keats: they did die young, but they were strong in body and mind far beyond the common order—they could not, otherwise, have been artists of the first rank, as they are."

Mental disease and mental mediocrity may exist with good health and fine physique. Healthy and finely working minds may exist in sickly and frail bodies, but, on the whole, the greatest and best mental productivity is associated with good physique and harmonious behaviour of all working parts.

DIETETIC TREATMENT OF GASTRIC ULCER

It is superfluous to emphasize the point that in the medical treatment of gastric ulcer diet is of supreme importance. Dr. Arthur F. Hurst in the *Textbook of the Practice of Medicine,* edited by Dr. Frederick W. Price, stresses the fact that the object of treatment of gastric ulcer is to reduce the secretion of gastric juice as much as possible, and to keep the hydrochloric acid in the stomach completely neutralized throughout the day, and, what is almost invariably neglected, throughout the night. The evidence is conclusive that free hydrochloric acid prevents an ulcer from healing. At the same time as much food as possible is required to maintain the patient's nutrition. Finally, the food should be non-irritating in its mechanical and chemical character.

In the *Boston Medical and Surgical Journal* for April 22, 1926, Dr. A. Everett Austin reviews the progress of gastroenterology in 1925 and refers to the dietetic treatment of gastric ulcer. As an outcome of investigations undertaken to determine the ingestion of fat and starch, the digestion of cheese and bread and the digestion of fresh and stale bread by the healthy stomach or the stomach diseased with old ulcers, concluded as follows: 1, That fat mixed thoroughly with starch is better borne than alone; 2, that the coarse starchy foods are better fitted for digestion when mixed with fat; 3, that cheese is better digested when taken with bread; and 4, that old bread gives less secretion of hydrochloric acid than fresh bread.

Jarotsky in seeking to provide a diet which will pass through the stomach without delay and without exciting gastric secretion, recommends the following: white of egg, because it is semifluid and has no extractives, and unsalted butter, because the fat tends to suppress gastric secretion and has great nutritive value. He insists that these should not be given together but at alternate periods. Two restrictions must be observed in the employment of this diet. No water must be taken by the mouth or rectum and sodium citrate must be avoided. It is asserted that even gastric hemorrhage does not militate against the use of this diet, as patients do better than on rectal feeding. Systematized, this diet calls for, on the first day, the white of one egg in the morning and at 3 p. m. twenty grams of fresh butter. Each day the white of egg is doubled in quantity, as is also the twenty grams of butter, so that on the tenth day the patient is getting ten eggs and one hundred and eighty grams of butter. Marked pyloric stenosis is the only contraindication to not continuing this diet for ten days. After ten days the patient may begin to take gruels of rice, tapioca, etc.; with an abundant supply of unsalted butter, mashed or baked potato. No milk is to be given during the whole treatment.

Hurst gives both milk and sodium citrate while the milk may be flavored with tea, coffee or cocoa and in cases requiring prolonged treatment the monotony of the diet can be relieved by the substitution of an equal quantity of custard, junket or arrowroot to which apple or red currant jelly may be added for some of the feeds and potato artichoke or other vegetable purée for others. Immediately before alternate feeds beginning at 7 a. m., half an ounce of olive oil is taken. This inhibits the secretion of gastric juice and supplies a digestible and unirritating food in concentrated form.

Strict dietetic treatment should be continued until for three weeks the patient has had no spontaneous pain, no trace of tenderness has been present, no occult blood has been found in the stools and the x rays no longer show the presence of an ulcer crater. The diet can now be rapidly increased until at the end of a week everything may be taken with exceptions enumerated by the author.

Hurst points out that it is not difficult to cause an ulcer to heal by suitable treatment in bed, but the predisposing exciting cause may still be present. Special precautions are therefore required to prevent recurrence. The patient should eat slowly and masticate

thoroughly. It is better to drink milk and eat a chocolate bar in the middle of the day than to bolt some less digestible solid food. Tough meat, new bread and other articles of food which cannot be chewed to a fluid consistence should be prohibited. Among other things prohibited are salads and all uncooked vegetables. The patient should remain strictly on a régime until he has been free from symptoms for two years, and should follow it in a modified form for the rest of his life.

As said before, the object of treatment is to keep the secretion of gastric juice at a minimum and to keep the hydrochloric acid in the stomach neutralized by day and night. Diet plays a predominant rôle in the accomplishment of this end and it is the aim of treatment to find a diet which fulfills the aforestated object of treatment. It is somewhat curious to note that authorities such as Hurst and Jarotsky do not agree in the value of milk and sodium citrate in the early treatment of gastric ulcer.

THE SCIENCE OF SANITATION

The opening session of the Jubilee Congress of the British Sanitary Institute took place on July 5, 1926, at Guildhall, London. Mr. Neville Chamberlain, Minister of Health, gave the presidential address. He pointed out that it was a remarkable reflection that the period of time during which the institute had been in existence had seen the development of the science of sanitation taken at a bound out of the Middle Ages into its present condition. In the year 1875, he said, the gross expenditure from revenue and from loans from local authorities in England and Wales on public health services appeared to have been just over £5,000,000; in 1923-4 the figure was over £61,000,000, and in addition over £27,000,000 was spent on housing in that year.

As regarded personal hygiene, one of the chief needs of the moment was more adequately to coordinate the existing services. The scheme of poor law reform which he had circulated for consideration had such coordination as one of its main objects. He hoped that there would be means of bringing the work of the great voluntary hospitals into closer relation with the health work which was being done by public bodies. He had been thought on a previous occasion to foreshadow a scheme under which the voluntary hospitals would be brought under public control. That was not his wish. His own strong conviction was that it would be a misfortune if they lost their present voluntary character. His hope was that, while retaining this character to the full, they would be able to cooperate more closely in the general campaign which the community, through public and voluntary institutions, was conducting for the conquest of disease.

The fight against chronic disease in Great Britain is being pursued with vigor, but, as Mr. Chamberlain pointed out, combined and coordinated efforts are needed to effect the best results. In the prevention of disease, unless the public take an active and intelligent part, the outcome will be unsatisfactory. But to take such a part, its members, and especially its women members, must be educated in the methods and practice of personal and domestic hygiene, and the manifest rôle of the doctor is that of educator.

Obituary.

JOHN THOMSON, M.D., LL.D., F.R.C.P.

Edinburgh

One of the greatest authorities on children's diseases, Dr. John Thomson, died at his home in Edinburgh on July 2, 1926. He was the son of Thomas Thomson, writer to the Signet, and was born in Edinburgh in 1856. He was educated at Edinburgh Academy and University and did postgraduate work in Vienna and Berlin. In Berlin he worked under Professor Henoch, the great German pediatrist, and developed a natural bent to the study and practice of diseases of children. For longer than forty years he practised in this branch of medicine with unflagging zest so broadening his knowledge that he became one of the best known specialists in the world.

In 1889 he translated Henoch's *Diseases of Children* and in the same year was appointed assistant physician to the Edinburgh Hospital for Sick Children. He published in 1898 *The Clinical Study and Treatment of Sick Children,* one of the best practical books in print. He was essentially accurate and thorough in all he did or wrote. His writing was based on the acid test of experience. Thomson upheld the value of clinical experience in the face of the onrush of bacteriology and biochemistry which threatened to obscure its importance. Like his friend the late Sir James Mackenzie, he deplored the fact that teachers and practitioners obsessed with the glamor of bacteriology and biochemistry were inclined to belittle practical experience and to lean too much on the result of laboratory findings. Both of these men were earnest and persistent searchers after truth. Thomson excelled as a bedside teacher, and it was a liberal education in the art of diagnosis to accompany him through the wards and in the outpatient department.

He assisted to found the Edinburgh Cripple Children's Aid Society and gave much of his time to the study and treatment of mentally defective children. Indeed his work on mental deficiency had a great deal to do with attention being directed to its importance. He aroused interest in a subject which had been neglected, an interest which continues. The literary work of his life was his great textbook of children's diseases, a new edition of which he had completed shortly before his death. Personally no man in the medical profession was more respected and loved than John Thomson. He represented the best type of Christian and was in every respect the unassuming gentleman with that strain of simplicity in his "make up" not infrequently seen in great men.

Two Giant Palms Guard the Entrance to the Main Building.

The Hollywood Hospital

EARL M. TARR, M.D.
Los Angeles, Calif.

In reading the first two paragraphs of the first Annual Report of the Hollywood Hospital one learns that:

"February 20, 1920, found Edward Hawkins, a young English promoter, a very sick man in a room at the Hollywood Hotel. The house doctor, Sharon M. Atkins, was unable to find for him an empty bed in a hospital in Los Angeles. After much telephoning, a local cottage insane asylum graciously admitted the patient. Mr. Hawkins recovered.

"Los Angeles, with one million population, had but one and one half beds per thousand; Hollywood, with a population of one hundred thousand, had none at all, and her fifty-nine regular physicians and an unusually discriminating people were entirely dependent on the mother city for hospital beds in time of trouble. Five beds per thousand were conceded to be but safe hospitalization under ordinary conditions."

The only unusual thing about this situation was that, upon recovery, Mr. Hawkins was allowed to leave the insane asylum without being required to prove that he was of sound mind.

A group of public spirited people took it upon themselves to plan a hospital for Hollywood. The Hollywood Hospital Company was formed and a lot was donated for hospital purposes. The City Council promptly refused a permit to use this lot for a hospital. The present location (in the same block with the Children's Hospital, a Class A institution) was then decided upon. Unscrupulous politicians again did all in their power to block the hospital plans. Fortunately, the City Council looked upon the present location with favor and passed the ordinance. The Mayor of the city (who had been generously supported by the Medical Profession) vetoed the measure. The matter was passsed over his head and a recall petition settled the political difficulties. Disgraceful as the whole affair was, it undoubtedly gained for the hospital many loyal friends.

Plans were then completed, contracts let, and actual construction began February 10, 1923. The first patient was admitted on May 15, 1924. Before the day was over there were fifteen patients admitted, three infants had been born and several accident cases were treated. So much for the beginning of Hollywood's first hospital.

The capacity of the hospital at present is one hundred fifty. Plans for additional wings have been made and construction of the next unit will probably take place very shortly. It is most gratifying to know that the hospital has been approved both by the American College of Surgeons and the American Medical Association.

The cost of the service in this hospital (four dollars and a half to six dollars for ward beds—six dollars to fifteen dollars for private rooms), at first glance, appears to be rather high.

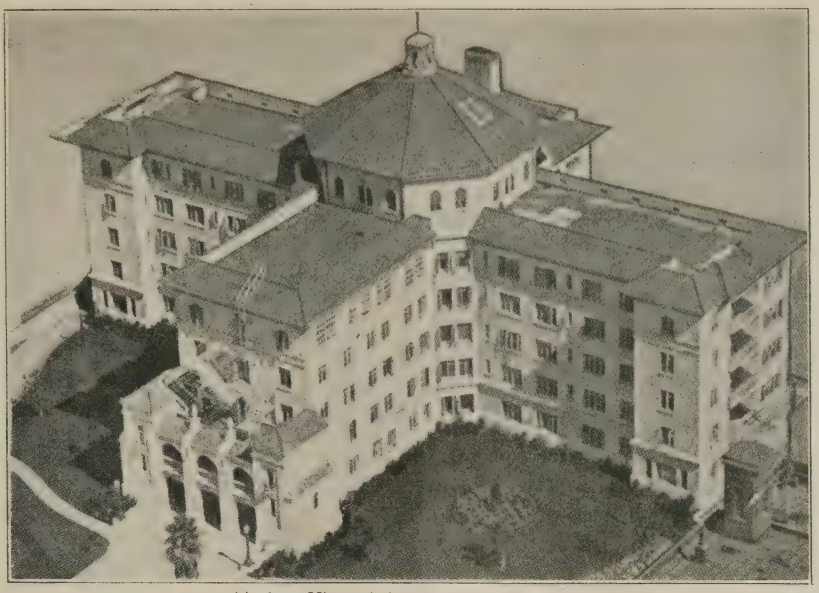
But when it is considered that many of the usual extras have been eliminated and that only graduate nurses are employed, it will be found that the cost compares favorably with that of other first class hospitals in the city.

On the active staff are some of the best doctors in the city, in this respect being normal. The management of the hospital is in the hands of a general superintendent who, because he is a medical man and because of his vast experience and executive ability, has his fingers on the pulse of the entire institution at all times. The hospital owes much to him for its steady and rapid growth as well as for its most efficient management.

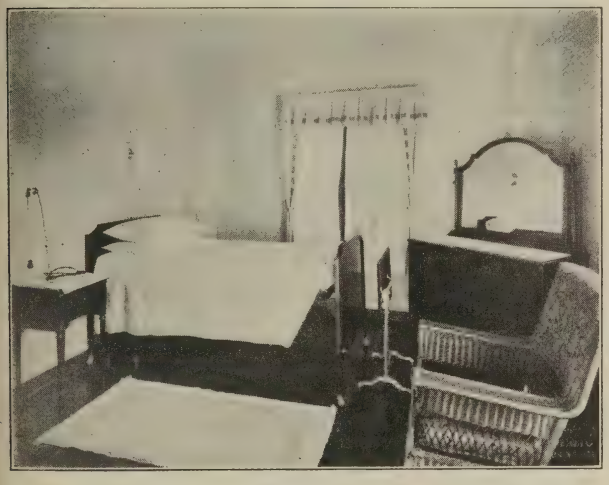
The need for such a hospital is well shown in the report for the first six months. Over two thousand cases were admitted and the average number of patients in the hospital per day was 109.1. One thousand four hundred and ninety-six operations were performed and four hundred and seventy-eight babies were born. The death rate was 32.5 per thousand, which is about 2.5 per thousand below the hospital average. These results have been attained in spite of the difficulties of opening and organizing a new hospital.

The executive organization of the hospital consists of the board of directors, officers of the hospital and the several advisory committees. President of the board of directors, Dr. Edwin O. Palmer; medical executive, Dr. Walter E. Deering, chairman; general superintendent, Dr. T. R. Ponton; chairman of the staff, Dr. Lucius J. Huff; secretary, Dr. T. R. Ponton.

The six advisory committees meet with the officers of the hospital at regular intervals and discuss ways and means of improving the service and standing of the institution. Medical advisory committee, Dr. Lucius J.

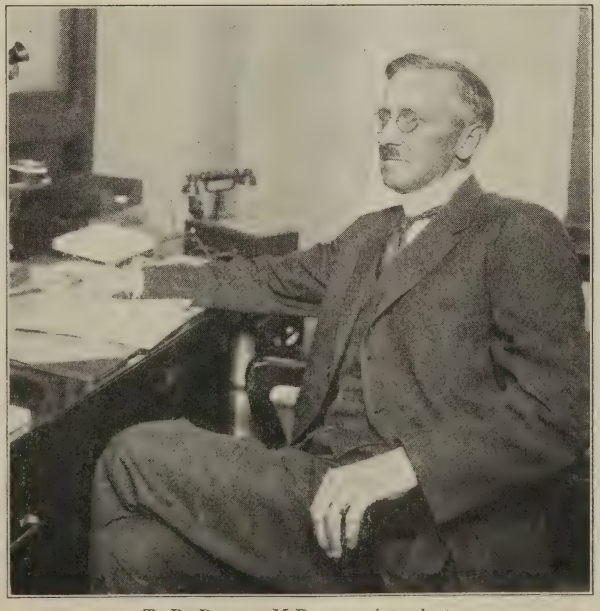


Airplane View of the Hollywood Hospital.



Private Room.

A Corner of the Modern Hospital Kitchen.



T. R. Ponton, M.D., superintendent.

Huff, chairman; surgical, Dr. Foster K. Collins, chairman; medical, Dr. Paul B. Roen, chairman; orthopedic and pediatric, Dr. Earl M. Tarr, chairman; obstetrical, Dr. Walter E. Deering, chairman; eye, ear, nose and throat, Dr. Theodore C. Lyster, chairman.

In the average hospital one nurse is supplied for four patients. In the Hollywood Hospital the proportion is one nurse to three patients. Graduate nurses are employed, and because of the excellent arrangement of the utilities, each nurse is able to give a maximum of time to the care of patients. Special nurses are unnecessary except in cases of extreme illness.

Staff meetings are held once each month. Subjects of medical interest are discussed and most original contributions appear later in first class medical journals. Problems of research are being carried on and many preliminary reports have been read before the general staff. Plans for the publishing of a *Staff Bulletin* are under way.

2007 Wilshire Boulevard.

News Items.

Ithaca Adds Hospital Wing.—A communicable disease ward with a twenty-two bed capacity has recently been completed at the Ithaca General Hospital. The new wing contains three stories and was built and equipped at a cost of $90,000.

Public Health Service Entrance Examinations.—Examinations of candidates for entrance into the Regular Corps of the U. S. Public Health Service will be held, on October 4, 1926, at the following named places on the date specified: Washington, D. C., Chicago, Ill., New Orleans, La., and San Francisco, Cal.

New Bronx Hospital Cornerstone Laid.—Mayor Walker officiated at the recent laying of the cornerstone of the New Bronx General Hospital at the corner of 168th Street and Gerard and Walton Avenues, the Bronx. When completed early next year, the hospital will have four hundred beds and will be under the administration of the New York City Department of Public Welfare.

Minnesota Society of Internal Medicine.—This society was organized on June 11th at a meeting of the St. Paul Town and Country Club. The first officers elected were Dr. Charles Lyman Greene, president; Dr. George D. Head, vice-president, and Dr. Edwin L. Gardner, secretary-treasurer. The first scientific meeting of the new organization will be held at Rochester in November.

Pharmaceutical Research.—The National Conference on Pharmaceutical Research will hold its fifth annual meeting at the Bellevue-Stratford Hotel, Philadelphia, on Saturday, September 11th. Delegates from the fourteen affiliated organizations will be present and present reports. The general discussions will be on census of research, graduate students in pharmacy and their research work, research topics, research grants and prizes, and research fellowships and scholarships.

International Postgraduate Medical Courses in Berlin.—Announcement is made that postgraduate-medical courses, international in scope, will be held in Berlin, October 4th-30th, under the joint auspices of the medical faculty of the University of Berlin, Kaiserin Friederick-Haus, and the assembly of academic lecturers. The courses have been arranged as follows:

October 4th to 16th, general medicine, with special attention to the latest advances in therapeutics.

October 18th to 30th, urology.

October 4th to October 30th and October 4th to October 18th (two separate courses), special departments of all branches of medicine.

Further information may be obtained from Kaiserin Friederick-Haus, Berlin, NW6, Luiseplatz, 2-4.

Portrait of the Doctors Mayo.—Gerald Cassidy, the artist, has recently painted portraits of Dr. William J. and Dr. Charles H. Mayo, which will be hung in the new clinic building to be completed in the near future at Rochester, Minn.

Preliminary Program of Tuberculosis Meeting.—The preliminary program of the twenty-second annual meeting of the National Tuberculosis Association, to be held at the Mayflower Hotel, Washington, D. C., October 4-7, is published in full in the June issue of the association's *Bulletin.*

Coming Conventions.—Meetings to be held during September and October include the International Union Against Tuberculosis, Washington, D. C., September 30th-October 2nd; National Tuberculosis Association, Washington, D. C., October 4th-7th; Conference of Health Officers and Public Health Nurses, Buffalo, N. Y., October 12th.

Metropolitan and Manhattan Hospital Merger.—Supreme Court Justice Mahoney of New York signed an order on July 21st permitting the consolidation of the Metropolitan Throat Hospital of 351 West Thirty-Fourth Street with the Manhattan Eye, Ear and Throat Hospital of 210 East Sixty-Fourth Street under the name of the latter.

New Cancer Laboratory—A modern cancer research laboratory will be opened in the near future by the Scientific Committee of the recently organized New York Cancer Association. The top floor of an eight story building at 250 West Forty-Ninth Street, New York, has been leased for the laboratory and plans have been drawn under the supervision of Dr. Isaac Levine, director of the association. The cost of improvements will be $75,000. A budget of $108,000 for the first year has been planned. The laboratories will have 7,500 square feet of floor space. There will be a lecture room with a seating capacity of 150, a publication office, a laboratory for the scientific director, and separate laboratories for physical chemistry, biology, radium, bacteriology, high voltage x ray therapeutics, experimental physics, organic and inorganic chemistry. There will be a staff of about thirty-six, including twelve research workers besides the technical assistants. The Scientific Committee in charge of the undertaking includes, in addition to Dr. Stewart, Dr. Barnet Joseph, representing the New York City Cancer Institute; Dr. Samuel A. Brown, dean of the Medical School of New York University; Dr. Holmes C. Jackson, dean of the Dental College of New York University; Dr. Alfred T. Osgood, professor of surgery at New York University; and Dr. William H. Park, director of laboratories of the Department of Public Health of New York City.

Personal.—Dr. J. N. Sandblom, dental surgeon to the King and Queen and Royal Court of Sweden was a recent visitor in New York City. He was suffering from toothache upon his arrival.

Dr. Simon M. Jacobs of New York and his family have been spending some time abroad for purposes of study and pleasure.

Announcement has been made of the marriage of Dr. Louis A. Friedman and Miss Della Weintraub.

Dr. Isidor J. Landsman, who has been connected with the x ray department of Fordham Hospital, New York City, for several years, has been appointed röntgenologist at Bellevue Hospital.

Dr. W. D. Coolidge, assistant director of the research laboratory of the General Electric Company and inventor of the x ray tube which bears his name, has been awarded the Howard N. Potts gold medal for 1926 by the Franklin Institute of Philadelphia. The medal, to be formally presented on October 20th, is "in consideration of the originality and ingenuity shown in the development of a vacuum tube that has simplified and revolutionized the production of x rays." In accepting the medal, Dr. Coolidge will present a paper on his new and powerful cathode ray tube.

Among members of the American Gynecological Association who have recently sailed from New York to visit European clinics and hospitals are Dr. J. Wesley Bovee, Dr. Joseph Brettauer, Dr. William E. Caldwell, Dr. Frederick C. Holden, Dr. George V. Kosmak, Dr. Franklin H. Martin, Dr. C. Joff Miller, Dr. Reuben Peterson, Dr. J. O. Polak, Dr. Richard R. Smith, Dr. Howard C. Taylor, and Dr. George Gray Ward.

Book Reviews

DIGESTIVE DISTURBANCES

Modern Views on Digestion and Gastric Disease. By Hugh MacLean, M.D. New York: Paul B. Hoeber, Inc., 1926.

MacLean's book on digestive disturbances is of great interest. It shows a tendency to return to views held formerly by pioneers in gastroenterology (Riegel, Ewald, Boas, Leube). The author's opinion that the degree of acidity of the gastric contents is usually due to a reflux of duodenal contents (pancreatic juice and bile) into the stomach and that this forms a normal process, cannot be accepted as a fact. MacLean's description of nervous dyspepsia is very practical. He says:

Nervous dyspepsia is one of the bugbears of the clinician. Though many cases can be diagnosed with ease, it is sometimes exceedingly difficult to be certain whether or not an organic lesion is present, and the most experienced observers frequently make mistakes. The condition may simulate, in every particular, some other gastric disease, such as ulcer, and the greatest care has to be exercised in dealing with these cases. The symptoms complained of are usually flatulence and abdominal discomfort, which sometimes, though not often, amounts to definite pain; occasionally, complaints of very severe pain are made. Bad taste in the mouth and loss of appetite are common, while vomiting is sometimes present. In short, the symptoms are such that frequently they would fit in with any diagnosis as far as gastric ailments are concerned. Though vomiting is not very common, I have seen a patient who vomited regularly for two and a half years after every meal. A hint as to the cause of the dyspepsia may be obtained from a consideration of the fact that the symptoms often vary from hour to hour and day to day, without any apparent reason. As a rule, they bear no definite relation to meals. This nervous dyspepsia is very common in hysterical and neurasthenic subjects, and as it is well known that the neurasthenic nearly always feels worse in the morning and better as the evening advances, it is always suspicious of a nervous origin when the gastric symptoms tend to improve towards night. General symptoms, such as headache, tiredness, depression, various pains in different parts of the body, and constipation, are often present. Frequently the patient is exceedingly introspective. Definite tenderness may be elicited in the upper abdominal region. It must be emphasized that in cases of this type the whole of the circumstances must be carefully considered in arriving at a diagnosis.

With regard to the etiology of cancer, we know practically nothing. Cancer is frequently supposed to follow a chronic gastric ulcer, the idea being that the ulcer undergoes malignant changes. On this assumption many textbooks make the statement that the majority of cases of cancer arise in patients who have had a long history of chronic dyspepsia; that the symptoms of this dyspepsia undergo a change at some period, and that this change marks the onset of malignant degeneration. How such statements ever came to be made is a matter for wonder, for careful examination of cancer patients shows definitely that this story is but a figment of the imagination. Certainly, on the assumption that ulcer precedes cancer, patients suffering from cancer ought to give evidence of a long history of chronic gastric ulcer. That they most assuredly do not, save in exceptional cases, is one other instance in which theory is shattered by fact.

More than twenty years ago the author set out, on the basis of the current teaching, to ascertain as nearly as possible what percentage of patients suffering from cancer had previously had definite dyspeptic symptoms which might be attributed to ulcer. To his intense surprise, no evidence of previous gastric disturbance was forthcoming in the great majority of cases, and ultimately the conclusion was forced upon him that cancer is really an acute disease which usually arises *de novo,* and not, as a rule, in a patient suffering from previous ulcer. Since that time further examination of the problem has amply substantiated this impression. The "ulcer-cancer" bogey is one of the mysteries of modern medicine. The question can be so easily settled, and yet, in spite of overwhelming evidence to the contrary, which can be seen by anyone who comes in contact with cancer cases, many clinicians place implicit belief in the view that the chief factor in the etiology of cancer is chronic ulcer.

The records of any hospital will conclusively prove that cancer is not usually associated with previous dyspepsia of long duration, and that, in nearly all the cases, the symptoms existed only for a short time before the examination.

The present volume is very practical and can be recommended as a useful addition to the practitioner's library.

Diätetik der Magen- und Darmkrankheiten. Von Prof. Dr. I. Boas. Zweite Auflage. Leipzig: Geo. Thieme, 1926.

The second edition of Professor Boas's book on diet in digestive disorders appears now in the form of lectures. This is a great advantage to the reader, as the conversational form is more enjoyable and easier understood. The author stresses the importance of abundant nutrition, especially in all cases of subnutrition. He also deprecates the too frequent use of broths, gruels and mashed vegetables to the exclusion of ordinary foods—when there is no indication for such a procedure. In peptic ulcers Boas does not favor the Lehnhartz diet (milk, eggs, and meat), as this interferes with the stool examination for blood. Nor does he recommend the Sippy régime, on account of the danger of alkalosis.

In the treatment of constipation Boas is a great advocate of olive oil and liquid petrolatum in conjunction with a diet containing plenty of vegetables, salads and fruits. In diarrheal conditions (chronic enteritis) fruits, salads and milk are not given, nor ice cold beverages. In some instances a fast of two days is advocated, before instituting a dietary régime.

A special feature of the book is formed by Kelling's lectures on diet after operations on the gastrointestinal tract.

This book on diet by Professor Boas, who is the greatest living master on gastroenterology, abounds

in excellent good advice in the management of the digestive diseases. It should find a prominent place in every physician's library.

Leçons de Pathologie Digestive. Par Professeur M. Loeper. Paris: Masson et Cie., 1925.

Professor Loeper's lectures on digestive disturbances are of great interest. There is a special chapter on syphilis of the stomach, the importance of which is well known. Another chapter deals with dyspepsia and erythremia, or polycythemia or Vaquet's disease. The most various dyspeptic states are encountered in combination with polycythemia. Thus fulness after meals and flatulence; pains late after meals simulating duodenal ulcer or pylorospasm; sometimes hyperchlorhydria and constipation; at times dizziness and nausea; sometimes gastric or intestinal hemorrhages.

The treatment in all these dyspeptic conditions must be directed, not so much against the form of dyspepsia present, as against the polycythemia which caused the dyspepsia. The principal indications are: bleeding; washing of the blood; diminishing its viscosity. The bleeding can be done by scarifications or best by venesection. The washing of the blood by drinking plenty of water between meals, or by rectal injections of saline by the Murphy drip. To diminish the viscosity of the blood there is no better remedy than citrate of magnesia, of which three to six grams daily should be administered.

This excellent book is herewith warmly recommended.

LACTOBACILLUS ACIDOPHILUS

Lactobacillus Acidophilus. By Nicholas Kopeloff, Ph. D. Baltimore: The Williams and Wilkins Company, 1926. Pp. 211.

This is a careful and painstaking piece of work. Written by a bacteriologist, it brings to the practising physician some of the spirit of rigid technic and straight thinking of the sister sciences.

The style is very clear. The data on which conclusions are based are given in full. Not only are the bacteriological aspects thoroughly covered, but the chemical correlations are presented in a surprisingly complete and convincing manner.

The book is not faddist and should therefore be all the more useful in an era where new medicaments are exploited in none too scientific a manner.

PHYSIOLOGY FOR STUDENTS

A Textbook of Physiology. By William D. Zoethout, Ph.D., 2nd Ed. The C. V. Mosby Company, St. Louis. Price, $4.50.

As stated in the preface, the aim of the book is to give dental, pharmacy and normal school pupils with limited time as short and comprehensive a course in physiology as possible. To this end, as the author indicated, the book develops the practical side of nutrition, physical exercise, mental work, fatigue and kindred topics.

Recently where dental schools have become amalgamated with medical schools the study of physiology is much more thorough, and the students would not be allowed to pass with only a smattering of the subject as is inevitable with this work.

MALIGNANCY AND EVOLUTION

Malignancy and Evolution. A Biological Inquiry into the Nature and Causes of Cancer. By Morley Roberts. London: Eveleigh Nash and Grayson, Ltd., 1926. Pp. 307.

The literature on cancer is profuse, and has been especially so within the past twenty years. This arousing of interest in malignant disease is due to several causes, one of which is the popular propaganda on the subject intended rightly to inform the general public as to the early symptoms of the malady and to urge those who have or think that they have such symptoms to obtain expert advice and to secure, if necessary, the measures which are best calculated to prevent the disease from further development. The increase of cancer has also impelled earnest efforts of research in all civilized countries, mainly with the object of discovering the cause and these efforts have in turn given rise to a flood of literature.

A few laymen have contributed their views upon the cause of this form of deviation from normal health. The latest of this band is Mr. Morley Roberts who has made a name as a writer of fiction and who is known as well as a poet and painter. It may be said, at once, that Mr. Roberts has equipped himself well for the task he has undertaken, that of a biological inquiry into the causes of cancer. He is deeply versed in modern biology but considers the question of cancer from the outlook also of a philosopher. His book would be remarkable if written by an investigator trained in the methods of scientific medical research from his youth upwards. As the output of a layman who did not begin to study biology until middle age it stands alone and appears likely thus to stand. However, Mr. Roberts denies that his lack of routine methods of laboratory research has hampered him in any way in his search for the truth concerning cancer, and avers that, on the contrary, it has aided him, in that he has been enabled to approach the subject with an open mind and in the attempt to unravel the mystery of cancer causation has not been led astray by preconceived ideas. His deep knowledge of sociology and psychology reinforced by that of biology together with his gift for presenting his views in coherent and logical sequence have combined to produce a work which is suggestive and fascinating.

The ruling motive of the book is to point out the striking analogies which exist between pathological conditions in animals and those in nations and societies, and he emphasizes the point that evolution and malignancy and all other diseases are as much matters of state as common social disorders, and he holds that if there were as many real men of science as there are men of law in legislatures this fact might soon be acknowledged. He compares nations and societies to human bodies, all of which are societies made up of units. In the case of the human body an immense society composed of minute units. It makes no difference, in the opinion of Mr. Roberts, what the size of these living units may be. Provided that they are grouped into societies the conduct of each individual of that society must be regulated by machinery devised for that purpose.

In a similar way Mr. Roberts insists that there must be machinery for regulating the conduct of the countless units of which the human body consists, and *pari passu* with the greater number of units and with

their more elaborate and more involved structure, the machinery of the body for the control of these units must be designed or evolved to meet these conditions. The government of the human body is sketched, the nervous system being recognized, of course, as the central directing power, and the parts played by the endocrines, by embryonic influence and so on are suggested. He leaves no source from which an analogy between human society and the human body can be traced untouched and concludes that the manner by which malignant tumors exhibit their characteristic feature, namely by invasion, is common to all living societies. He points out, however, that this invasion is not peculiar to malignant manifestations but is included in Nature's scheme of evolution, and he believes that pathological processes are normal in that they belong to the machinery of evolution.

Mr. Roberts is inclined to think that the pathologist takes too much upon himself in regarding pathology as the only true means whereby the cancer problem can be interpreted correctly, taking the view that malignancy is as much a biological and developmental problem as it is a pathological one. Also he has somewhat original ideas as to tumors. "After all," he says, "a tumor is merely a swelling and no more. When we speak of one that persists we have yet to class it. And the failure to class cancer lies at the root of the comparative indifference shown to it by nearly all scientific workers but those who regard it as an isolated problem and their special business."

A cancer then regarded from the author's consideration of the question from the biological, sociological and philosophical aspect, is a variation of the problem of growth. Its origin is that of the placenta and other growths. And the solution of the problem of cancer growth will be a long step toward solving the problem of socalled abnormal growths in the body.

The book now being discussed is the second one Mr. Roberts has written on medicoscientific subjects. In *Warfare in the Human Body* he brought forward his doctrine of "hostile symbiosis" which he suggested to proceed naturally from the laws of energetics, since the autonomy and resistance of parts are necessary if work of any kind is to be done in any possible mechanism, whether organic or inorganic. He proceeds in *Malignancy and Evolution* to apply the teaching of hostile symbiosis to the interpretation of abnormal growth and development with special reference to cancer and sarcoma. His entire argument is based on the contention that hostile symbiosis rules in all communities. Be civilization of the highest and be a community of the strictest law abiding tendencies interests are certain to clash sometimes and the only way out of the difficulty is to compromise. All units of society are hostile symbiotes to a greater or less extent. In the body, says Mr. Roberts, a like state of affairs exists. The living cell bears the same relationship to its living neighbors, one or other of which is ready to seize upon and take advantage of any weakness of its near dweller. And this being so, the explanation is suggested of the origin and development of malignant growths. If Mr. Roberts's theory of hostile symbiosis is accepted, this explanation is perfectly valid. If the directing forces of government of the body, as the endocrines, perhaps the thyroid in particular, the nervous system, and the substances termed by the author as endocrines, fail to break down a similar result ensues as when the stable government of a country fails. The cancer in the body acts in the same way as cancer in society. It is the outcome of the failure or breakdown of one or other of the directing forces.

Mr. Roberts deals with the causes to which malignant growths have been ascribed by various investigators, and criticizes their modes of research and conclusions reached, but space is lacking to discuss his views on this subject. Mr. Roberts takes a tilt against conditions of living in civilized countries and seems to infer that these conditions may be factors in the production of cancer. He points out that the great majority of mankind, especially in those countries which pride themselves on their manufactures, are deprived of pure air, of sunlight and natural food. Although this review exceeds considerably the limit allowed by the editor, the excuse must be that the book is so greatly out of the ordinary and the views expressed are so boldly original and stimulating. It is recommended warmly to medical readers.

BACTERIA

Pleomorphism in Bacterial Protoplasm, A Study in Psittacosis. By Andrew Todd McClintock. Privately printed. Archives of the Andrew Todd McClintock Memorial Foundation. Volume I.

In discussing remarks and conclusions of a scientist value is placed on the primary efforts when the work is successfully repeated in another laboratory.

Psittacosis is a comparatively rare disease, but readers of this book who work in laboratories will undoubtedly always be on the lookout for a couple of examples to study in the hope that some of McClintock's observations were correct.

Many questions occur that unfortunately cannot be verified from the original source. The technic seems not to have been good, since it appears that perhaps the green color often mentioned as the gram negative bacillus was pyocyaneus. If the single cell isolations had been used there would have been eliminated the possibility of overgrowth of anaerobes and other bacteria by pyocyaneus. Even the pictures suggest mixed cultures.

The book is not clearly written and a good example of vague statements is the paragraph beginning Chapter X, on the hypothesis regarding disease of the animal organism.

The principle of the Foundation is most worthy and encouragement should be given to the production of carefully written and scientifically correct articles. After all, this book stimulates others at least to want to test the material even if only to obtain negative conclusions.

COLLECTED PAPERS

Collected Papers by the Staff of the Henry Ford Hospital (First Series, 1915-1925). With 151 Illustrations and 42 Charts. New York: Paul B. Hoeber, Inc., 1926.

These papers are all reprints of articles published in some of the leading medical journals of America. They indicate the highly scientific nature of the work done at the Henry Ford Hospital, but very many of them are of such a nature as to be of little practical value to the general practitioner. It is an excellent piece of bookmaking.

Medicoliterary Notes.

Dr. Huntington Williams, district state health officer of New York State, has an interesting article in the *American Journal of Public Health for August.* Another significant feature of this issue of the journal is a symposium on domestic and industrial wastes in relation to public water supply, including papers by Dr. John Emerson Monger, State director of health, Columbus, Ohio; George W. Fuller, consulting engineer, New York City; John H. Fertig, of the Pennsylvania Legislative Reference Bureau; and a report of the discussion of the problem in detail at the joint session of the Public Health Administration and Public Health Engineering Sections of the American Public Health Association at the American Health Congress held at Atlantic City in May.

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Dr. Horace Carncross, psychoanalyst of Philadelphia, is the author of a forthcoming publication of Scribner's entitled *The Escape from the Primitive.*

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Opportunities for Medical Women Interns is the title of an interesting article by Dr. Bertha Van Hoosen of Chicago in the July number of the *Medical Woman's Journal.*

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The *World's Health* for May contains an excellent article by Raymond H. Torrey, on State Parks in the United States of America.

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The *News Letter* for June, published by the National Committee for the Prevention of Blindness, contains a good reference list of articles in recent periodicals, both American and foreign, on ophthalmological subjects.

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The New York State Department of Labor has made the August number of their *Industrial Hygiene Bulletin* a prevention of window cleaning accidents issue.

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The *Monthly Bulletin* of the Philippine Health Service is running a series of interesting articles of Studies on the Serology of Leprosy. The initial article was in the September, 1925, issue of the *Bulletin.*

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A patient in a Richmond, Va., hospital discovered recently, after undergoing an operation for appendicitis, that his appendix had been and that his liver was on his left side. He had known for some time that his heart was on his right side. He has enjoyed the best of health all his life, according to reports of the case.

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The Biological Standardization of Insulin, including reports on the preparation of the international standard and the definition of the unit, is the subject of the latest report of the Health Oganization of the League of Nations.

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The American Society for the Prevention of Cruelty to Animals, 50 Madison Avenue, New York City, is preparing for distribution reprints of a rare brochure, *Daggett's Rights of Animals,* of which a very small edition was published in 1791. The pamphlet was written as a thesis for a Master's degree at Brown University, Providence, in 1791. It was printed by David Frothingham at Sag Harbor in 1792 on heavy linen paper. The work had been considered lost for many years, until Edward P. Buffet of Stony Brook L. I., walked into the society's office with a photostat copy which he offered for publication.

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The *State of Connecticut Health Bulletin* publishes in its June issue an informing article by Winifred W. Arrington, of the Division of Mental Hygiene, on Connecticut and the Mental Health Clinic.

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The *World's Work* for July publishes a valuable contribution to the history of medicine in the form of an article by Sir George Newman entitled the Advance of Medical Science since 1876.

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Chicago's Health for June contains a list of the larger cities of the world, exclusive of London and Osaka, with their death rates per 1,000 persons for 1925. These were, Chicago, 11.5; Berlin, 11.7; New York City, 12.2; Vienna, 12:9; Philadelphia, 13.2; Buenos Aires, 13.7; Paris, 14.7; Bombay, 25.4; Calcutta, 32.7.

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In a recent contest conducted by the National Council for the Prevention of War votes were cast for twelve "world heroes" by the pupils of 195 American and 386 foreign schools. There were in all 609 candidates. The result was that Pasteur received the largest number of votes, with Lincoln second; the others chosen, in the order named, were Columbus, Washington, Franklin, Wilson, Florence Nightingale, Joan of Arc, Socrates, John Gutenberg, David Livingstone and George Stephenson.

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The *American Mercury* for June contains an article by Clarence Darrow of Leopold-Loeb fame entitled The Eugenics Cult. It is chiefly a protest against what the writer feels to be an unwarranted invasion of our liberties and an unjustifiable attempt to interfere with the laws of nature. "We know something about biology," he writes. "We know a little about eugenics. We have no knowledge of what kind of man would be better than the one that Nature is involving to fit into the environment which he cannot escape. We have neither facts or theories to give us any evidence based on biology nor any other branch of science as to how we could breed intelligence, happiness or anything else that would improve the race. We have no idea of the meaning of the word 'improvement.' We can imagine no human organization that we could trust with the job, even if eugenists knew what should be done and the proper way to do it."

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The July issue of the *Bulletin* of the Municipal Tuberculosis Sanitarium of Chicago is devoted to a full account of the recent tuberculosis survey of the city of Chicago made by the institution.

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When the library of the famous Dutchman, Hermann Boerhaave, was sold at auction, a sealed volume bearing the title, *The Deeper Secrets of Medicine,* fetched one of the highest prices. When the seal was broken, the book was found to contain the following single sentence: "Keep your head cool and your feet warm; then you will defy all doctors."

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A new publication which has recently made its appearance is the *Bulletin* of the Association of American Medical Colleges, with the July issue as its first number. Fifteen years ago the association published a quarterly bulletin, which, after a brief existence of two years, had to be discontinued because of lack of funds. Four years ago it was again decided that a bulletin should be published, but no funds were provided. The new bulletin is another endeavor to supply a long felt need for the dissemination of news of interest to medical colleges. It will be published quarterly by the Association of American Medical Colleges, 25 East Washington Street, Chicago, for free distribution.

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Report has it that Rebecca West, young author of *The Judge* and other works, will come to America in the near future to make her home. Miss West has recently been in Italy with Miss G. B. Stern, the English novelist.

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The Health Organization of the League of Nations has recently issued its third and final report on Cerebrospinal Meningitis in Prussia in 1923 and 1924, by Prof. Dr. E. Seligman of Berlin.

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The National Library of London has obtained permission from D. Appleton and Company to transcribe *The Van Roon,* a novel by J. C. Snaith, into braille for the blind.

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The *S. C. A. A. News* for July is a Cattaraugus County health demonstration number. Methods and exhibits are described in detail, with an account of the various meetings and other events of interest.

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By a unanimous decision of the judges, the Indian play entitled *Nélagony, or Good Water,* submitted by the Pawhuska (Oklahoma) High School, was awarded the first prize of one hundred dollars in the national play contest offered by the National Tuberculosis. Anemone Pemberton is the author of the play. The songs and music are the work of the music department of the school.

Abstracts from Current Literature

GASTROENTEROLOGY

Celiac Disease: Its Definition and Diagnosis.—The following definition is suggested by Reginald Miller (*Lancet*, February 13, 1926): Celiac disease is a digestive disorder arising in infants and young children who show no evidence of chronic intestinal or other organic abdominal disease; it is characterized by a persistent malabsorption of dietetic fat, which causes large stools containing an excess of split fat, enlargement of the abdomen, lack of growth, and other symptoms.

DIFFERENTIAL DIAGNOSIS

The most characteristic diagnostic signs of celiac disease are as follows: 1, the abdomen is enlarged but shows no signs of organic disease; the buttocks are often peculiarly small; 2, except in severe cases in very young children, the abdominal wall is not conspicuously wasted; 3, with the same exception general wasting is not so severe as is the lack of growth—the weight for height is nearer the normal; 4, the excess of fat in the stools shows that fat wastage is out of proportion to that of other foods, and it persists when the rest of digestion is normal; 5, on a strictly low fat diet the amount of fat in the stools remains comparatively high, usually well over fifteen per cent. of the dried feces; 6, the fecal fat is invariably well split, the neutral fat being usually much below twenty-five per cent. of the fecal fat. The last three points display the essential features of celiac disease. There are two main types: the diarrheic (classical) and the nondiarrheic.

In the diarrheic type, the patient passes large, pale, unformed, and offensive stools containing a great excess of fat, chiefly in the form of fatty acid crystals, which from time to time may set up intestinal irritation with mucus in the stools. The diagnosis of this type may be discussed under various headings.

Rickets.—The catarrhal diarrhea of rickets is usually easily distinguished from the fatty diarrhea of celiac disease. In it the fat loss is neither so excessive nor so persistent. There is also the well known association between tetany and other spasmophilic signs in some cases of celiac disease, but taking the condition as a whole celiac children escape the grosser forms of rickets.

Tuberculosis.—Abdominal tuberculosis may produce fatty diarrhea in two ways: 1, by inflammation and ulceration of the intestine, and 2, by lacteal obstruction from tuberculous glands.

Chronic enteritis (enteric infantilism).—The difference between chronic enteritis and celiac disease is quite clear. In celiac disease there is first a failure of fat absorption with a secondary and transient intestinal catarrh. In chronic enteritis there is failure in the digestion of all sorts of foods, and the intestinal hurry and disease of the intestinal wall may cause an excess of fat in the stools. The therapeutic test in the two is different: the fat free diet in the one, and the low, easily digested diet in the other. In chronic enteritis the wasting of the patient is more severe than the lack of growth; the abdominal wall is usually thinned, and evidence of disease within may be felt, such as enlarged spleen or glands, or thickened intestine. The stools may be mucous and perhaps bloody; the digestion of all foodstuffs is impaired, that of the fat with, and not out of proportion to, the rest. As the enteritis subsides so fat digestion improves and does not persistently remain defective as in celiac disease. Finally, on a low fat diet the percentage of fat in the stools drops to a lower figure than in true celiac disease. In persistent enteritis a pancreatic steatorrhea, however, might develop; there may also be a distinct degree of stunted growth. The following types of chronic enteritis may give rise to difficulty in diagnosis: tuberculous enteritis, the dysenteric type, the Lamblia intestinalis type, the type due to irritant poisons and sprue.

Pancreatic steatorrhea.—The stool of pancreatic disease is large, pale, offensive, and oily. It contains a great excess of fat, and its diagnostic feature is the distribution of the fecal fat; a large proportion (over twenty-five per cent.) is in the form of neutral, unchanged fat, appearing in the stool, as separated oil or grease which congeals on cooling; in smaller amounts it appears microscopically as oil droplets. In celiac disease, on the other hand, the fat in the feces is well split. Pancreatic steatorrhea is rare in childhood. Congenital steatorrhea starts from birth and is almost certainly due to an inborn absence of pancreatic lipase, the other functions of the pancreas remaining unaffected. These patients show no stunted growth. Acquired pancreatic disease in children may occur as a sequel to chronic enteritis. It has also been attributed to inherited syphilis. Cases of pancreatic infantilism have also been reported.

Lacteal obstruction.—Fatty diarrhea is rarely caused by lacteal obstruction through the presence of tuberculous mesenteric glands.

In the nondiarrheic type the symptoms are all milder than in the classical diarrheic type. The chief difference between the two groups lies in the appearance of the stools. In the classical type with severe symptoms, the stools are large, pale, unformed, highly offensive, and containing forty to eighty per cent. of fat, chiefly in the form of fatty acids. In the nondiarrheic type the stools are again larger than normal, but they are colored, formed, not offensive, and contain thirty to fifty per cent. of fat, chiefly in the form of soaps. Similar stools are passed in the quiet stage of the diarrheic cases. Here the greatest difficulty arises in connection with two groups of cases: 1, temporary overfeeding with fat; 2, chronic enfeebled digestion of all foodstuffs.

Right Iliac Fossa Pain.—H. W. Carson (*Lancet*, February 13, 1926), confines his remarks to the less acute and to chronic conditions. He believes that acute conditions are much more certainly differentiated, and that even if operation is performed with a faulty diagnosis, the operation is probably essential and the real disorder is discovered and remedied. In chronic cases the outlook is very different, and if diagnosis is not very exact, and if the correct treatment is not instituted, not only is there a failure to cure, but the patient's sufferings may be aggravated.

Although it is twenty-five years since chronic inflammation of the appendix was first suggested as the cause of continued abdominal discomfort and ill health, the idea has become so firmly rooted that even today it is practically impossible for any one to avoid thinking of the appendix in every case where right iliac fossa pain is complained of.

One of the common causes of right iliac fossa pain is muscle strain, and it is seen in two classes of patients, the young schoolgirl and the middleaged athletic man who is giving up his sports and beginning to put on weight. The former strains her oblique muscles owing to vigorous exercise and the latter's pain is due to a commencing inguinal hernia.

A frequent cause of right iliac fossa pain is some trouble in the urinary tract. A stone in the ureter is, perhaps, the most likely to be overlooked. It is sometimes very difficult to differentiate roentgenographically between ureteric stone and tuberculous mesenteric glands without passing a ureteral bougie, not always a simple task in a child.

Tumors of the colon should be thought of. They may be tuberculous or cancerous. Both give rise, in addition to right iliac fossa pain, to a tumor which is in close relation with the anterior abdominal wall and are therefore easily detected; but cancer in the left colon often gives rise to right iliac fossa pain owing to back pressure and distention of the cecum when the growth itself cannot be felt. Pain in the right iliac fossa with a distended cecum in a constipated patient over fifty should always make one suspect a stricture in the left colon.

Then there are the cases of obscure etiology. The sufferers are generally women between the ages of twenty and forty. They are of spare build and have a characteristic carriage due to certain skeletal defects. The head is carried forward, there is a slight dorsal kyphosis, the ribs are close together and form an overacute angle with the rib cartilages, resulting in a flat, narrow chest with a reduced lower outlet. The lumbar concavity is abolished, and the sacrum articulates with the spine almost in a direct line instead of at an angle of thirty degrees. They complain of joint pains, neuralgia, headaches, and nausea. The abdominal wall is poorly developed and many points of tenderness are found in the abdomen, the right iliac fossa is especially sensitive, and often the secum is too easily palpable and the kidneys are frankly prolapsed. The stomach and large bowel are found

ptosed with delay in emptying. The appendix usually has been removed without relief. The cause of this right iliac fossa pain is posture, for it is relieved when the patient lies down. The two structures that are more mobile than they should be are the kidney and the right colon. Nephropexy has been abandoned in these cases because the kidney is only one among many displaced organs, and fixation of only one organ does not bring relief. The same may be said of the removal of socalled Jackson's membranes and fixation of the ascending colon.

But least of all has success attended the removal of the appendix in the socalled cases of chronic appendicitis. Here differential diagnosis is most important. Even though the appendix may show microscopic evidence of disease, appendectomy does not provide a clinical cure. Chronic appendicitis must not be diagnosed by right iliac fossa pain alone. The true symptoms of chronic appendicitis are those of the socalled appendix dyspepsia. The pain is felt in the epigastric or umbilical region, is excited by taking food—particularly some kinds of food—and is never relieved by recumbency. Nausea is very common. There is often an associated pain in the right iliac fossa, but this is never the only symptom. Nutrition is not impaired, nor is there anorexia, nor as a rule, constipation. This picture is in strong contrast to the other type where there is constipation, loss of appetite and energy, deficient nutrition, certain signs of nervous instability, and constant dragging pain in the right iliac fossa relieved by rest. These cases are often confused with gastric and particularly duodenal ulcer, or gallstones.

Röntgenography after a barium meal is of little value in diagnosing appendicitis. Radiologists are not agreed as to whether visualization of the appendix means that it is diseased, or whether failure to visualize the appendix means disease. Tenderness on pressure on the visualized appendix is open to misinterpretation as it overlooks the effect of pressure by a heavily leaded glove on the eleventh nerve. It has also been definitely proved that all ptosis is not pathological. With these reservations, roentgenography is of the greatest assistance in the diagnosis of the causes of right iliac fossa pain.

Pain confined to the right iliac fossa should not even be considered as due to appendicitis, especially in the absence of a previous attack, until the most painstaking investigation has disproved other possibilities.

Surgery of Stomach and Duodenum.—D. C. Balfour (*Surgery, Gynecology and Obstetrics*, Vol. XLII, No. 2) presents a report of four hundred cases of the more complicated lesions of the stomach and duodenum with an unusually low mortality. Some of the routine measures of operation as employed at the Mayo Clinic are given and the necessity of proper preoperative and postoperative care is strongly emphasized. Ethylene has been the general anesthetic, combined, when necessary with novocaine to produce block anesthesia, or sufficient ether to give satisfactory relaxation. Morphine one sixth grain and atropine one one hundred and fiftieth grain have been given as a routine half an hour before operation. The almost total absence of pulmonary morbidity and the low mortality in four hundred operations on the stomach and duodenum, one hundred and thirteen of which were for carcinoma, more than suggest the advantages of ethylene in these cases at least. The two disadvantages of ethylene are its inflammability and the difficulty of efficient administration. The former is not a menace if reasonable care is exercised, and the latter can be overcome by experience. Lundy has recently introduced into the Mayo Clinic. a combination of carbon dioxide with ethylene, which is more effective than ethylene alone.

There are certain points with regard to surgery of the stomach and duodenum which are always worthy of repetition. The first is adequate exposure, in which long incisions, usually in the left rectus, and selfretaining retractors and packs, are valuable aids. The second is adequate mobilization. This applies particularly to large gastric ulcers adherent posteriorly. It is frequently possible, by methodical mobilization of the stomach, to carry out satisfactorily, partial gastrectomy or excision, when the ulcer is situated so high that on first impression it appears to be irremovable. The third point is absolute hæmostasis. This can always be secured if scrupulous care is taken in the ligation of individual vessels and in the placing of sutures. The fourth point is the importance of avoiding incomplete operations, since a primary radical operation can often be performed with no more risk than an incomplete one, or one intended as the first of a two stage procedure. Another very useful adjunct is the suction pump. I have made it a routine to empty the stomach completely before finishing the operation, and often to empty and collapse the distended stomach with the pump before beginning the mobilization, as suggested by Devine. Finally there must be a proper appreciation of the mechanics of whatever operation is being performed; that is. the restoration of gastrointestinal continuity in such a way that adequate drainage is secured. Trauma should be kept at a minimum.

Diverticulitis and Its Surgical Treatment.—Diverticulitis is a condition of the latter half of life, due to the formation of small hernial protrusions from the lumen of the bowel through the muscular coat. These pouches or diverticula, may be found in any part of the alimentary canal (except possibly the rectum), but are most common in the large intestine and particularly in the pelvic portion.

J. P. Lockhart-Mummery (*Lancet*, February 27, 1926) states that we must recognize two distinct conditions due to pouching of the walls of the large gut. Diverticulosis, a condition in which there are numerous small pouches or hernial protrusions in the walls of the colon, which are demonstrable by examination with a barium enema under the x rays, but which is not accompanied by any symptoms referable to the diverticula.

The other condition is that of diverticulitis, in which secondary inflammatory changes have taken place in the diverticula, and definite symptoms attributable to these changes are complained of by the patient. Of the author's forty-one cases, twenty-five were in men and sixteen were in women. The average age was sixty, and the youngest patient was forty-two. It has been suggested that the cause of this condition is the habitual use of aperients, but the fact that the condition is commoner in men than in women seems to disprove this, as there can be no doubt that the habitual use of aperients is much commoner with women.

Vague pain in the abdomen, discomfort, slight disturbances of the bowel actions, are all too uncertain to be of much value, though, if they lead the doctor to have the colon examined by x rays, may reveal the condition. The typical symptoms of a developed diverticulitis are attacks of pain and tenderness over some portion of the colon, usually the sigmoid flexure, accompanied by a slight rise of temperature. Symptoms of chronic obstruction of the bowels accompanied sometimes by the presence of a palpable tumor, felt either through the abdominal wall or per rectum by bimanual examination, may present and will closely simulate carcinoma, but may be distinguished from it as a rule by the accompanying tenderness and signs of inflammation. The attacks may be at long intervals and there may be a history of difficulty with the bowels extending over a period of years. The diagnosis is often very difficult, but a bimanual examination of the pelvis will often enable a mass to be felt, and the sigmoidoscope gives useful information in some cases. A barium enema, if properly done, is of the utmost value, but only the very best x rays are of any use.

To obtain proper photographs certain things are essential. The photograph must be taken instantaneously. The enema should be made up with a thin medium, such as buttermilk. The exposure should be made some twelve hours after the enema has been evacuated.

There is a tendency for one or more of the diverticula to perforate as a result of sloughing of a concentration through the thin wall of the diverticulum, from gangrene of the diverticulum, or from the formation of a local abscess, which subsequently bursts into the peritoneal cavity or some other viscus. The latter is the most usual. Perforation into the bladder is not uncommon. An intense cystitis results with the passage of flatus and feces per urethram. Perforation, with the formation of local abscesses in the pelvis and one or more openings on the abdominal wall, is not uncommon. These abscesses are nearly always multiple, and proper drainage cannot be readily established.

The greatest interest attaches to those cases in which there is tumor formation from the deposit of dense fibrous tissue around the inflamed diverticula. Such tumors often reach a considerable size, and are almost invariably fixed and adherent to other structures. These cases are frequently confused with malignant disease. Evidence of inflammation and the presence of diverticula in other parts of the colon will help in the diagnosis, but such evidence is not always

present. Two distinct types of tumor may be recognized pathologically. In the more usual type, on laying open the tumor there are several large diverticula containing concretions surrounded by an irregular mass of very hard fibrous tissue. In the other type, the tumor consists of a dense mass of cartilaginous tissue of a pale gray color, through which can be traced numerous very narrow channels representing diverticula. These tumors are so hard as to be frequently mistaken for neoplasms. They are always adherent to other structures, and are generally situated at, or near, the middle of the sigmoid flexure.

The surgical treatment of diverticulitis presents many serious difficulties. The indications for surgical interference are as follows: 1, Persistent attacks of pain and tenderness in spite of careful medical treatment, the latter being directed to keeping the bowel contents liquid, and general means to improve the patient's resistance, rest, dieting, etc.; 2, attacks of threatened obstruction of the colon; 3, the presence of a palpable tumor in the colon; 4, evidence of threatened perforation into the bladder (attacks of pain in the left iliac fossa accompanied by frequent and painful micturition; 5, evidence of perforation with abscess formation or peritonitis.

Interference with the diseased bowel may easily set up grave sepsis or result in a fecal fistula, and great care and judgment is necessary. Colostomy well away from the seat of the trouble is the safest procedure and should not be dangerous if the diseased bowel is not too thoroughly explored, or not explored at all. Resection with end to end anastomosis and temporary cecostomy is the ideal treatment. As an alternative, wrapping the diseased bowel in omentum after freeing adhesions will give good results. When serious complications, such as local abscess, perforation into the bladder, or general peritonitis have already occurred colostomy is the only justifiable procedure.

The Etiology of Diverticula of the Intestine.—R. Davies-Colley (*British Medical Journal,* February 13, 1926) mentions three possible explanations, each of which he thinks is reasonable in that a parallel can be found for it in pathological processes occurring elsewhere in the body. They are as follows:

1. The subperitoneal fat weakens the intestinal wall by inducing a simple atrophy of the muscle from pressure.
2. The fat invades and separates the muscle fibers and so produces weak spots. In this case the natural line of invasion would be along the vessels which penetrate the muscular coat, so that these would be the most likely points for a hernia to occur.
3. The fat becomes infected, probably by the intestinal contents, and the muscle in contact with it is weakened by an inflammatory process.

Furthermore, in the light of x ray evidence, there would seem to be good grounds for believing that this last alternative is the true explanation of most of the diverticula occurring in the colon, though some in the colon and perhaps most of those in the small intestine, where infection of the fat is less likely to happen, may be ascribed to one or other of the noninflammatory causes suggested.

RADIOTHERAPY

Diathermy in Abdominal Operations.—G. W. Crile (*Surgery, Gynecology and Obstetrics,* Vol. XLII, No. 2) says that it must be borne in mind that on account of the enormous spread of the capillaries, veins, and arteries very near the surface of the viscera, in an abdominal operation the blood in the whole splanchnic area almost immediately assumes the temperature of the air to which it is exposed. Thus the application of a diathermy current in certain bad risk cases is advocated. One pole of the diathermy apparatus is placed upon the lower chest on one side and the other brought opposite the dome of the liver, so that the current passes through the upper abdominal organs including the liver. And since this current is applied continuously during the operation the temperature of the liver and of the abdominal viscera in the track of the electric current is maintained at or above the normal regardless of the exposure of the intestines. The electrodes can be put in place and the diathermy current established before the abdominal incision is made and neither the surgeon nor the patient need be aware that such a current is passing.

The higher incidence of pneumonia after abdominal operations than after operations of an equal magnitude on other portions of the body is well recognized. In view of this fact, and in view of the facts which we have cited one might well question whether this is not the result of the cooling of the blood in the important organs within the chest plus the general depressed function of the organism as a whole as the result of the cooling of the liver. We are therefore now noting whether or not the maintenance of a constant temperature in the liver and other abdominal viscera by the use of diathermy is lessening the incidence of postoperative pneumonia.

We are also using repeated doses of diathermy after operations in feeble and aged patients, and after especially wide and prolonged exposure of the upper abdomen, delivering the dose through the bases of the lungs, as this is the area where postoperative pneumonia is initiated. In addition to the advantage of heat, the increased temperature must induce a more active circulation in this area and thus increase the defense against infection.

Comparable to the effect of the direct application of heat by the passage of an electric current through the resistant tissues is the application of radiant heat energy by means of the Alpine or quartz mercury lamp. Just as this has been found effective in cases of lowered resistance, of tuberculosis, and so forth, we have found that it is equally effective when applied to anæmic and cachectic patients whose general resistance has been lowered by prolonged wasting diseases.

Heliotherapy.—John B. Hawes, 2d (*Boston Medical and Surgical Journal,* February 18, 1926), presents the following summary of his views on heliotherapy in tuberculosis.

1. Sunlight treatment is indicated in practically all cases of nonpulmonary or socalled surgical tuberculosis. It is not indicated in febrile cases of pulmonary disease or where there is other evidence that the condition is active.
2. Actual sunlight is better than artificial sunlight. If the latter is used by means of a lamp it should be as an adjunct to exposure to actual sunlight.
3. Heliotherapy should not be looked upon as the only means of treatment nor as the most important means of treatment but as an adjunct to rest, fresh air, proper nourishment and general hygiene.
4. Signs and symptoms of too much sunlight, whether artificial or real, are the same as a tuberculin reaction, probably from the same cause. They are increased temperature and pulse, general malaise, headache, debility, with sometimes renewed activity in the tuberculous focus.
5. Sunlight treatment, whenever possible, should be done under the supervision of the physician; in pulmonary cases, this is absolutely essential.
6. Sunlight treatment, in some form or another, can be carried on in the patient's home and does not necessarily require sanatorium or hospital equipment.
7. Sunlight treatment should be carried on methodically and if possible according to a definite schedule.

Fifteen Cases of Operable Carcinoma of the Breast Treated by Radium and X Rays.—J. H. Douglas Webster, J. P. Thierens and F. G. Nicholas (*Lancet,* February 27, 1926) are not in favor of radiation rather than operation in operable cases of breast cancer; radiation treatment is still too much in the experimental stage in its application to malignant disease, and its results are still too little known for this attitude to be adopted. At the same time radiation, which has sometimes led to the complete disappearance of inoperable growths and recurrences, should give very good results in operable cases, and radiologists therefore ought to study and discuss the problems of the treatment of operable breast cancer, for they never know when an operable case may be referred to them for some special reason.

In this series of cases every patient either refused operation, or else age, chronic bronchitis, heart disease, or glycosuria made operation inadvisable. The interim results suggest that such patients should be more freely offered the alternative of radiation treatment than they are at present; at least they should not be told that there is no alternative to operation. Eight cases were treated with x rays, two with combined radium insertion and x rays, and five with radium surface applications.

All of the five patients treated with radium did well locally, within the limits of the time that they were under observation. In each case there were supplementary medium voltage x ray applications to the epigastrium, lateral chest,

chest wall and axilla, supraclavicular triangles, opposite axilla and breast.

Summarizing the total fifteen cases there were two deaths, one due to an intercurrent disease, and one of the disease over two years after treatment was discontinued; in one case there was an abdominal metastasis. Of three new cases, one patient showed no sign of disease. One is having treatment for a radium dermatilis, the disease appearing arrested. The remaining eight have been in good general and local condition for some time.

Comparing the radium with the deep x ray cases, there is no notable difference so far in the results. The quantity of radium necessary for the thorough treatment of breast cases is so large that only a few cases can be treated with radium at present.

In conclusion one point should be referred to. This is the diagnosis, in cases where there is no histological confirmation. It has been shown that a positive expert surgical diagnosis of breast cancer is correct in about ninety-four per cent. of cases. On this proportion one (or at most two) of this series may not have malignant disease. But practically every case showed at one time or another, in addition to characteristic signs in the primary growth, axillary or supraclavicular gland enlargement or skin nodules. And in this series no patients with mastitis and possibly very early carcinoma were included; several cases of this nature have been treated so far with success.

Radiotherapy in the Treatment of Rodent Ulcer (Basal Cell Epithelioma).—F. Hernaman-Johnson (*Lancet,* February 20, 1926), believes that radiotherapy is the treatment of election for "virgin" rodents. In the case of a recurrence, rays of a different wave length from those originally used should be employed. If improvement is not manifest within a month some method of resensitizing the tissues, as by curettage or ionization, should be resorted to, after which radiation may again be given a trial. If these methods are not producing definite and continuous improvement at the end of two months the diathermic cautery should be employed. This method owes its success not merely to destruction of cancer cells, but to the sharp reaction produced in the surrounding tissues. If all recurrences are dealt with promptly there should be no need for surgery in the ordinary sense of the term. When, however, the recurrence has already assumed large proportions, it may be necessary to invoke the aid of the plastic surgeon to make good what has been destroyed.

The Röntgen Treatment of Hypertrophy of the Prostate.—Charles Guilbert and Robert D. Gauillard (*Urologic and Cutaneous Review,* March, 1926), state that röntgenotherapy of the hypertrophied prostate exerts its effect in most cases directly upon the pathological tissue, and according to most authors the hypertrophy seems to be an adenofibroma, in which the fibrous tissue, which remains unaffected by the x rays, becomes prevalent only toward the last. There are, therefore, two types of enlarged prostate: the soft ones with a preponderance of glandular element, and the hard ones, fibrous and sclerotic. In the first class, the röntgen treatment is powerful; in the second class it is questionable; practically, either may show improvement.

During the second week after the exposures, there is sometimes a vesical or rectal reaction. After the third week, the clinical results are obvious; the urinary retention decreases progressively to a few cubic centimeters, even sometimes to zero. In cases of acute retention in which spasmodic and congestive causes play a large part, sedation comes quickly and the early results are very brilliant. In chronic retention, the results are slow, but they appear after six weeks.

The most favorable cases are those of soft prostates in which the adenoma predominates. The greater the amount of fibrous tissue in the growth, the less brilliant are the results of radiotherapy. However, they never are *nil.* There is no contraindication for the röntgen treatment. Special attention, however, should be given to the dosage when there is some degeneration of the neoplastic form to be feared, in which case high dosage is necessary. In plethoric patients, furthermore, often having hemorrhoids, one finds a smooth, soft prostate and one expects a quick and definite result. But such are disappointing cases: these plethoric patients have their hypertrophy reduced for a short time, but six months or a year later, it recurs and there are some vesical symptoms. It is necessary in these cases to employ anticongestives to reduce the portal system and also to lower the blood pressure.

Relapses were observed in seven out of forty-five cases. The authors observed no adhesions or sclerotic changes that interfere with any future surgical operation, nor any neoplastic degeneration following the röntgenotherapy.

Irradiation of the prostate is a very mild treatment without danger for the future. It should be instituted as early as possible, as a beginning hypertrophy is less sclerotic, more sensitive to the x rays, and because the vesical symptoms are transitory and curable. In the presence of infected bladders, vesical irrigations and vaccines are indicated.

EYE AND EAR

At What Time Should a Cataract Operation Be Done?—M. Sachs (*Wiener klinische Wochenschrift,* March 11, 1926) asserts that an operation for cataract is never urgent. Usually there is sufficient time to correct any existing complicating factors that tend to minimize the good result of the operation. Not only must absolute asepsis and antisepsis be strictly maintained in the operation, but the operative field should also be uncontaminated with bacteria before an operation is undertaken. The edges of the eyelids should be free from inflammation, the conjunctivæ pale without any secretion. Epiphora should be corrected by probing of the nasolachrymal duct. Dacryocystitis should be taken care of. Conditions like diabetes, catarrhal infections of the respiratory tract and hypertension should receive the proper preliminary attention.

Maturity of the cataract, in itself, is not essential for its removal, but rather one should be guided by the condition of the other eye. If the latter is good, it is well to wait till the cataract is ripe. Conservative treatment, except with diabetic cataract, has always failed up to the present time. As about ninety-five per cent. of the cataracts remain almost stationary for years, all of the reports regarding apparent cures from treatment must be viewed skeptically.

There can be no doubt that the typical diabetic cataract is favorably influenced by continued insulin treatment, especially in young persons. In case the cataract is situated axially, sight may often be considerably improved by mydriatics. Naturally, there must be no suspicion of a predisposition toward glaucoma, which might be provoked by the dilatation of the pupil. In such cases the author puts a few drops of a one per cent. homatropine solution into the eye in the morning and a 0.5 per cent. pilocarpine solution before retiring to avoid a rise of pressure.

An Investigation of the End Results of Sixty Cases of Radical Mastoid Operation with Special Reference to Hearing.—J. A. Keen (*Journal of Laryngology and Otology,* March, 1926) comes to these conclusions: 1. The hearing that remains is quite independent of any points in the history previous to the operation. Provided the bone conduction remains good, the ultimate hearing has no relation whatever to the length of time the otorrhea has existed. 2. Hearing tests carried out before operation do not allow one to draw any conclusions as to the amount of hearing which will remain after operation, but are unreliable because the conditions in the middle ear are subject to constant changes. 3. The findings at the time of operation have no connection with the final hearing result, except that when cholesteatoma are found the hearing tends to be bad. 4. The type of operation cavity most favorable to hearing is the large, or moderately large, dry cavity lined by a thin epithelium. When the lining is firm and like skin, the hearing may be comparatively good. The hearing is poorest when the lining of the cavity is of the mucous membrane type with slight moisture. 5. Two hearing tests a year apart showed the hearing to be better in one third of the cases at the end of a year, to be worse in two thirds.

Anatomically Irregular Sphenoidal Sinusitis With Optic Neuritis, Localized by the Suction Syringe.— Patrick Watson-Williams (*Lancet,* October 24, 1925) states that the investigation of the sinuses in patients suffering from optic nerve defects, suspected to be of nasal origin, sometimes present special difficulties, owing, on the one hand, to the absence of any visible purulent discharge, and on the other to the irregular anatomical conformation of the sphenoidal sinuses and the ethmoid cells.

The sphenoidal sinuses show variations. Thus, one sphenoidal sinus may be large and overdeveloped at the expense of the other, so that the large sinus extends far

beyond the midline and consequently the small ill developed sinus may be, so to speak, packed away into a corner difficult of access. Again, the posterior ethmoidal cell may be unusually large and overdeveloped at the expense of the corresponding sphenoidal sinus, which may be so encroached on that the large ethmoidal cell occupies more or less the usual site of a sphenoidal sinus, or it may lie above the sphenoidal sinus, much as a first floor lies above the ground floor. While these anatomical variations are of no moment in health, it is quite another matter when the sinuses become infected and the focal infection causes partial or complete loss of vision, or, may be, is the primary and essential cause of rheumatoid arthritis, neuritis, neurasthenia, unsoundness of mind, and so forth, any or all of which do occur. If there is plentiful purulent discharge the indications for opening and draining the involved sinuses are sufficiently plain, but unfortunately such cases are less frequently associated with the complications mentioned than are the cases where the discharge is slight, macroscopically nonpurulent, and often unnoticed until inquired into. It is therefore important to detect and to localize precisely the source of any infective focus and, when confronted with anatomical irregularities in these, relatively small deep-seated sinuses, to avoid overlooking the focus, an error which may cost the patient his sight or worse.

The author obtains valuable information as to the size and infection of sphenoidal sinuses with the use of the suction syringe and cannulas. In a case reported, it was found that the left sphenoid extending well across the midline was entered as readily through the right as through the left nasal passage. Suspecting, therefore, that the right sphenoid was probably small and ill developed and had been missed, another cannula was entered, directed well outward, and the real right sphenoid was thus entered and explored, and yielded pure streptococcus on culture and film. The test applied was as follows. Two cannulas were inserted, one through the right nasal passage, the other through the left, so that both had entered what was presumed to be the large left sphenoidal sinus. Then, on attaching a syringe to one cannula and syringing down sterile water, it escaped out through the cannula in the other side. Again two cannulas were inserted both through the right nasal passage, one into the left sphenoid, the other directed outwards to enter the right sphenoid sinus, and on syringing water down the one it did not come up and escape by the other, showing that the two cannulas passed in through the right nose were in different cavities.

The practical point is that one thereby gains precise information as to the actual source of the extracted sinus contents and the bacteriological investigation tells whether it is or is not infected.

Ocular Pain.—A Freeland Fergus (*British Medical Journal,* September 19, 1925) asserts that, roughly speaking, pain in ophthalmic practice depends on two main factors: 1, uncorrected errors of refraction, of accommodation, or of muscular balance; 2, septic infection. In glaucoma, the relief depends upon operative procedure, although miotics relieve temporarily. The author prefers pilocarpine.

Errors of refraction must be accurately corrected as soon as possible. Relief from ophthalmic pain due to poor accommodation will follow the restoration of muscular balance.

The cause of a very large amount of ocular pain is briefly included in the word "sepsis." Iritis and cyclitis are always septic in origin. When a corneal ulcer or operation wound becomes painful it invariably means that sepsis has supervened. The cause of the sepsis should be removed by finding the nidus of infection and dealing with it. It is also important to identify the germ that is causing the mischief.

Clinically, inflammatory processes may be divided into two groups: those of mechanical origin, which are not self-sustaining and do not tend to extend beyond the original locus, and the bacterial, which continue the supply of the irritant and usually have the power of spreading. In an ordinary wound, the pain eventually wears off, but in septic conditions, the reverse is generally the case. Prolapsus of the iris, intraocular hemorrhage, and perhaps some other accidents, may cause pain; but pain following an ophthalmic operation after the lapse of some hours is almost invariably septic in origin. The infection may come from one of two sources: 1, defective technic; 2, disease, as iritis. The source is often in the blood, as in iritis due to syphilis or a specific urethral discharge, pyorrhea alveolaris, and sometimes affections of the intestinal tract. Chronic forms of iritis and cyclitis are often definitely known to be associated with tuberculosis. Most idiopathic, chronic or subacute inflammations of the uvea are due to either syphilis or tuberculosis. Atropine should, if tolerated, always be used in iritis, even when the tension is high. The cause of the pain must always be sought and corrected.

Ordinary corneal ulcers, seen in their early stages, should not be treated with cocaine; atropine is almost equally injurious. On no account should an eye with a corneal ulcer be bandaged, as it dams back the secretions. Drainage must be instituted, and the best method is the moderate use of a miotic, say a few drops of a 1 per cent. solution of pilocarpin put into the conjunctival, say once or at most twice daily. The eye should be douched at least three times daily with sterilized normal saline, and may be protected from excessive light by suitable glasses. This form of treatment prevents the development of a leucoma and hypopyon. Iritis need never be feared with this treatment.

The Optic Canal in Optic Atrophy.—Leon E. White (*Boston Medical and Surgical Journal,* October 22, 1925) has shown that excessive pneumatization of the sinuses adjacent to the canals produced narrowing and distortion. In a series of radiographs it was found that patients with optic nerve disturbances had abnormally small canals. By analyzing thirty-six cases of optic nerve involvement it was found that in the smaller canals the vision in fifty per cent. was permanently impaired, while in patients with larger canals the percentage was much less.

Sixty-seven cases of optic atrophy were studied. These were divided into five groups according to the size of the optic canal. Nasal infection was responsible for atrophy in twelve out of one hundred and twenty-four canals, or ten per cent. This occurred in the small canals,—nine in Group I and three in Group II. The other causes were as follows:

In twenty-four canals the atrophy followed brain tumors or pituitary disease.

In eighteen canals the atrophy was of luetic origin.

In eighteen canals the atrophy was congenital.

In fourteen canals the atrophy followed from diseased teeth.

In eight canals the atrophy followed retinitic pigmentosa.

In six canals the atrophy was from oxycephaly.

In four canals the atrophy was secondary to tonsillar infection.

In four canals the atrophy was from spinal meningitis.

In four canals the atrophy was from infantile paralysis.

In four canals the atrophy was from multiple sclerosis.

In two canals the atrophy followed cerebral hemorrhage.

In two canals the atrophy was unclassified.

Increased intracranial pressure seemed to be responsible for the abnormally large optic canals as intracranial lesions were found in all. Atrophy of the optic nerve in infancy was not responsible for the very small canals.

While it is possible to surgically enlarge the optic canal, cases are rarely seen at the stage when it would be beneficial.

The Operations for Glaucoma.—Samuel A. Durr (*American Journal of Ophthalmology,* March, 1926) sums up the matter in the statement that no one operation can be used in all cases. Iridectomy is the operation of choice in acute glaucoma, with preliminary posterior sclerotomy, or adrenalin, if needed. Trephining or iridotasis is permissible. The Elliot trephine should be used in chronic noncongestive glaucoma, especially with contracted fields. Iridotasis may be done. Cyclodialysis may be tried first, reserving the trephine for resistant cases. Iridectomy should be performed in glaucoma due to swelling of the lens. Buphthalmos is best combatted by trephining, or repeated posterior sclerotomies. Cyclodialysis should be used in glaucoma due to disease of the retinal vessels, and it may be done in patients who have chronic conjunctivitis. Adrenalin is valuable in ophthalmoscopic examination, as a therapeutic agent, and as an aid to operation.

Ocular Findings in Addison's Disease.—Albert L. Brown (*American Journal of Ophthalmology,* June, 1926) observed an advanced case of Addison's disease in which the patient presented bronzing of the lids with a darker line above the ciliary border of each upper lid. The pupils were dilated, while the fundus showed pigmentation around each macula and disc, with a zone of similar pigment deposits joining the two regions.

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GREGORY STRAGNELL, M. D., *Editor*

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Medicolegal Notes.

PRODUCTION BY INSURER OF RESULTS OF AUTOPSY ANALYSIS

In an action on an accident insurance policy where the defense was that death was by suicide, an order under Iowa Code 1897, §4654, required the insurer to produce papers, findings, and records of the laboratory analysis of the organs of the deceased's body removed during the autopsy. In a certiorari proceeding to test the legality of the order, the Iowa Supreme Court, Travelers' Ins. Co. v. Jackson, 206 N. W. 98, modified the order so as to require the insurer to furnish a copy of the direct results of the analysis, but not private correspondence or memoranda or expressions of opinion as between the insurer and its physicians.

DILATATION OF HEART FROM CRANKING AUTOMOBILE HELD NOT ACCIDENT

The Circuit Court of Appeals, Fifth Circuit, holds, Carswell v. Railway Mail Assn., 8 F. (2d) 612, that death due to dilatation of the heart, caused by cranking or attempting to crank an automobile two days before the death, was not the result of "external, violent and accidental means" within the meaning of an insurance policy. The court said that "where one voluntarily undergoes physical exertion, and nothing unexpected or unintended happens while he is doing so, the fact that such exertion unintentionally causes injury does not make the means whereby such injury is caused, namely, the voluntary exertion, accidental," and there was no evidence to support a finding that anything unexpected or involuntary happened while the insured was trying to start the car.

UNJUSTIFIABLE FRIGHT NOT REASONABLE GROUND FOR REFUSAL TO SUBMIT TO OPERATION

The New York Appellate Division holds, Palloni v. Brooklyn-Manhattan Transit Corp., 214 N. Y. L. 430, that compensation should be denied a claimant under the Workmen's Compensation Act if he unreasonably refuses to submit to an operation.

In this case the claimant sustained an injury which produced a right inguinal hernia and aggravated a preexisting condition on the left side which was predisposed to a scrotal hernia. Three physicians recommended an operation, to which the claimant refused to submit, alleging fear of the consequences. The court, reversing an award, said: "The question of reasonableness may be one of fact, and if so found, is binding on this court, but in this case there is no dispute of fact. There is a single question, Was unjustifiable fright a reasonable ground for refusal to submit to an operation which had been recommended by physicians representing the claimant, the employer, and the Industrial Board, and consequently presumed to be for the best interests of the claimant, especially where there is no proof that such operation is fatal or even dangerous? As a matter of law, it must be held that such fright alone was not a reasonable ground for refusal." This appears to be the first reported case in the New York courts on the subject, but the court cited cases showing that the rule followed is well established in other jurisdictions.

CHIROPRACTORS REQUIRED TO PASS MEDICAL EXAMINATION IN MICHIGAN

In a prosecution of a chiropractor for violation of the Michigan Medical Practice Act (Gen. Laws 1915, Sec. 6724 et seq.) by practising medicine without a certificate of registration or license, the defendant contended that the act, requiring registration and fixing qualifications of all persons practicing medicine, is unconstitutional, unreasonable, arbitrary and violates the federal Fourteenth Amendment. Counsel for defendant insisted the statute operates to prohibit chiropractors from obtaining a license because it requires them to pass an examination before a medical board in subjects which no school of chiropractic teaches, and which are not used by them in the practice of their profession. The Michigan Supreme Court, People v. Lewis, 233 Mich. 240, 206 N. W. 553, affirming conviction, said: "We take it that defendant desired to practise a system of treatment of human ailments or diseases without the use of drugs. If so, is it unreasonable to require him to pass an examination before a board of qualified experts in the subjects of anatomy, histology, embryology, physiology, chemistry, bacteriology, pathology, diagnosis, hygiene and public health?

"It is within legislative power to require persons practising treatment of human ailments or diseases without the use of drugs to possess knowledge of organic structure, intimate structure of tissues, embryonic evolution, functions of the body, molecular and atomic structure of bodies, microorganisms, science of diseases, morbid processes observable in various diseases of organs, recognition of disease by its symptoms, science of health, and efforts made and measures and precautions deemed advisable for the promotion and protection of public health. This power has been exercised, and the regulation provided must stand, unless violative of rights guaranteed by the state or the federal Constitution. We find no limitation upon the subject in the state Constitution. We can conceive of no deprivation of the equal protection of the law in requiring drugless healers to understand the subjects mentioned. The fact defendant has not received instruction in some of these subjects offers no objection to the validity of the law. We decline to indict the medical profession of design to annihilate the system of chiropractic adjustment and the Legislature of supinely surrendering the lawmaking power in aid thereof. It may be that no chiropractic school teaches all the subjects mentioned, and chiropractors feel that a knowledge thereof is unnecessary and unused in their school of practice, but this affords no reason for requiring the Legislature, in recognition thereof, to enact no law not in conformity therewith."

NECESSITY FOR FORCIBLE DELIVERY HELD FOR JURY—EXCESSIVE DAMAGES

In an action for alleged malpractice in a confinement case to recover damages for the benefit of plaintiff's child, whose leg was fractured and arm paralyzed by the manual force exerted by the defendant, the attending physician, in the alleged negligent and premature delivery thereof, the Minnesota Supreme Court held, Korman v. Hagen, 206 N. W. 650, that there was testimony contradicting the findings of the defendant as to the necessity of making a forcible delivery, which carried the issue of the negligence to the jury.

The defendant was dismissed within 48 hours of the birth of the child, and other doctors called to take charge of the case. The trial court charged the jury that the defendant could not be held responsible for the augmented damages caused by the subsequent negligent treatment of the child's injuries. Under the evidence and the law thus given, which the jury were bound to follow, it was held that no large sum could be assessed against the defendant for the arm injury, for it appeared that, although the doctor who superseded the defendant discovered that injury in time likely to affect a cure by simple treatment, none was given. The evidence not justifying a large sum for the arm injury, the verdict was held so excessive as to indicate passion and prejudice on the part of the jury, and a new trial was granted unless plaintiff should consent to a reduction to $4,000.

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Gastrointestinal Diverticula*

WILLIAM SEAMAN BAINBRIDGE, Sc.D., M.D., C.M.
New York

The comprehensive study of diverticula of the intestines is a comparatively recent phase of medicine. Until twenty-five years ago, acquired diverticulations of the colon were considered pathological rarities, though it is true that Sir Charles Ball wrote a paper on the subject in the early eighties and various other writers called attention to these abnormalities from time to time. However, the first really extensive work concerning diverticula in this portion of the canal was published by Telling (W. H.) in 1908. Up to this time, few text books of surgery had given much space to these diverticula.

In a recent paper, Dr. W. W. Babcock said: "It is curious that the profession has been so slow to appreciate the pathological condition of diverticulitis. Most of us as students heard or read nothing of diverticulitis. The *American Textbook of Surgery,* which we studied, was edited by two well known Philadelphia surgeons; and in this book no reference was made to diverticulitis and yet both of these authors later developed the condition. Both were operated upon with intestinal resection and both recovered from the operation. One, some years later, died with secondary malignant involvement of the spine; the second had a nonmalignant type and fortunately is still living. These were among the earlier cases reported by Dr. Mayo. Our largest encyclopedia of medicine and surgery had no reference to this condition. The editor, also a noted Philadelphia teacher and author, had diverticula and was operated upon."

From the quotation cited above, one may deduct that this condition of the gastrointestinal tract is far more common than is generally supposed. I feel that, to date, the importance of these diverticulations has not been altogether appreciated by the medical profession. Diverticula of the intestinal tract have not had the attention they merit!

Diverticula are divided into two classes—congenital and acquired. The cause of these intestinal pouches is still, more or less, a matter of speculation. Some writers hold to the embryonic or congenital theory of origin. G. S. Huntington, Professor Keith of the Royal College of Surgeons, London, and Professor J. R. Eastman, in the dissection of numbers of fetuses, found many prenatal structures in the abdomen. These, doubtless, persist in the adult, thus accounting, in many instances, at least, for certain types of intestinal diverticula. Keith states that these diverticula are outgrowths of intestinal epithelium which are formed during the third month of life and which perforate the muscular (intestinal) coat. They usually disappear, but, occasionally, they, with masses of pancreatic tissue attached to them, later, are found and may be the original source of a certain proportion of intestinal diverticula. The most common of the structures which remain in the adult intestine is Meckel's diverticulum, which was described by the anatomist, Meckel, in 1805. It occurs in two per cent. of subjects and commonly forms a finger-like sac on the free border of the ileum, from two to four feet above the ileocecal orifice. This diverticulum varies in length and shape; its blind end is frequently bulbous and the site of secondary diverticula. There have been one or two cases reported in which a Meckel's diverticulum has been found in several children of the same family (Warren), and Kelly reports that such diverticula are often associated with other abnormalities—harelip; spina bifida; atresia of the anus, and double or triple monsters.

A very unusual pathology of (Meckel's) diverticula has recently been cited by Stulz and Woringer of Strasbourg, France, who have accumulated twelve cases of peptic ulcer of diverticula in children. These writers state "that the first and at the same time the most constant sign of this condition is abundant intestinal hemorrhage. The hemorrhage may last for days or even weeks. If the child keeps alive and if there is no perforation, the hemorrhage stops after a lapse of time, but only to start afresh after some weeks or months. This tendency to repetition constitutes, together with the abundance and red color of the blood emitted, the main characteristic in peptic ulcer of a diverticulum." All of the ulcers (cited by these writers) were subjected to histological examination and "were found to have developed on the margin mucosa area." This ulcer of the diverticulum has nothing to do with "diverticulitis." "The latter stands in the same relation to the diverticulum as appendicitis to the cecal appendix."

In summing up the treatment of congenital diverticula with peptic ulceration, Stulz and Woringer state "that the only logical measure is surgical removal."

*Read before State Medical Association of Texas, May 26, 1926.

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In acquired diverticula, three pronounced types stand out; the inflammatory; the traumatic, and the evolutionary. Of these, the inflammatory is, perhaps, the most widely recognized. This type is often the result of peritoneal reaction within the intestine, an infection such as that of the typhoid bacillus, or it may result from some inflamed organ in the immediate vicinity. Chronic mild infections of the peritoneal covering of the cecum and appendix, transmitted through the intestinal wall, are considered by some as responsible for these diverticulations.

Many writers, including Moynihan, call attention to the association of duodenal diverticula and ulcers; Dickey (S. B.) thinks "that in such cases the diverticula are probably out pocketings due to perforation of an ulcer; cicatrization, or to some other condition dependent on inflammatory change."

The traumatic theory of origin is closely allied to that of the inflammatory since, though the trauma may occur from without or within the gut, the resulting diverticulation usually takes place at a site in the intestine weakened by chronic inflammation or by an infective process.

Of the various hypotheses offered to explain acquired intestinal diverticula, perhaps the one which accounts for the greatest number of these sacculations is the mechanical or evolutionary theory. Sir Arbuthnot Lane's interpretation of the evolutionary accessory ligaments and bands, acquired by man to counteract the tendency to enteroptosis, incident to the disturbed mechanical relations of the bowel, consequent upon the assumption by man of the upright position, needs no elaboration here. It is too well known. The theory may be applied to intestinal diverticula in that, if continued pressure or stress and strain will change the bony structures of the body, it certainly will produce changes in the soft tissues—and there is no reason why the viscera of the abdominal cavity should prove an exception to this principle. Personally, I believe that a large proportion of intestinal diverticula have their origin in the mechanical factors of constipation, persistent enteroptosis and continued excessive distention of the intestinal canal. The overloaded and distended bowel throws an abnormal strain upon a fixed point in the tract until, finally, the intestine succumbs to the continued pressure (possibly at a site already weakened congenitally or by an old inflammatory process), the mechanical relations of the bowel are impaired and an angulation or a diverticulation may result. Back pressure of this type frequently occurs at the cecum with resultant diverticulosis of the wall.

Since the introduction of the x ray, in the diagnosis of gastrointestinal conditions, it is apparent that acquired diverticula may be found anywhere in the alimentary canal. In many cases the diverticula are multiple. They are quite common in the large intestine. Of forty cases reported by Sudsuki, fifteen were in the sigmoid. Case (J. T.) reports that in 6,847 barium meal studies, he found duodenal diverticulosis in eighty-five cases, diverticulosis of the jejunum in four cases, and diverticulosis of the ileum in one case. In the same series, colonic diverticula were found in 138 cases. The Johns Hopkins Hospital statistics on 2,600 necropsies, record thirteen diverticula, other than Meckel's, in the small intestine and eighteen in the colon. Linsmayer found forty-five cases of duodenal sacculations in 1,367 necropsies.

Beer states "that diverticula of the sigmoid are peculiar in that they alone seem likely to undergo extensive pathological change." There are few statistics available to indicate how frequently carcinoma occurs at the site of a diverticulum. Lynch reports the coexistence of carcinoma and diverculitis in four out of twelve cases of intestinal diverticula. In 116 cases of intestinal diverticula seen at the Mayo Clinic, malignancy was found in fourteen.

At times a diverticulum may become enormous and contain fecal matter; perhaps also fecal concretions. I recently found and removed an enterolith the size of a hen's egg from a diverticulum of the jejunum. Diverticulations may evidence no symptoms whatever, or may become inflamed, cause suppuration and perforate. Da Costa suggests that a diverticulum of the intestines sometimes is the focus of a large fibrous area which may be mistaken for cancer. Wilson (L.) also has called attention to a low grade chronic infection of these sacculations causing a peridiverticulitis or extramucosal inflammation with formation of a mass simulating cancer.

As previously stated, diverticula of the intestines may remain healthy for years and then undergo pathological change. A condition which frequently develops in a diverticulum is a diverticulitis—chronic or acute. This inflammatory process may be limited to a single diverticulum in any portion of the intestinal canal or it may spread and inflame multiple diverticula. The inflammation may progress until an abscess forms. Occasionally the abscess will perforate into the intestines.

There is a wide difference of opinion, in the medical profession, concerning the treatment of intestinal diverticula—with or without accompanying diverticulitis. Case (J. T.) writes "that although in the majority of cases seen at necropsy there have been few indications that treatment was needed, this cannot be stated as generally applicable to diverticula of the duodenum discovered with röntgen rays. The later category of these patients frequently suffer from some more or less chronic digestive complaints, usually suggestive of right upper quadrant trouble, and there is always the possibility that there may exist some well defined connection between the diverticulum and the patients' symptoms. Dr. Case adds: "duodenal contents were found in a diverticulum on the seventh day after an opaque meal, in one of my cases. The evidence before us, therefore, strongly suggests that the diagnosis of a duodenal diverticulum may generally be considered as indicating a surgical operation." Peck (C. H.), on the other hand, wrote thus: "diverticula without symptoms are common and call for no treatment. Patients should be kept under careful observation if any danger of perforation or abscess formation is present. Perforation, with localized abscess, or peritonitis, of course, calls for prompt intervention; sometimes simple drainage is sufficient. Persistent chronic thickening of the mass, with subacute symptoms, demands exploration and often resection of the gut to exclude malignancy, or to remove a definitely thickened segment."

Where diverticulitis is present, and the patient a poor risk, surgically, Drueck prescribes palliative

treatment. He indicated, in such cases, a course of therapeutics which includes "keeping the feces soft or liquid (with laxatives and oils, never purgatives)" and he prescribes "belladonna and morphine; liquid diet, and frequent high enemas—the patient to be kept under careful observation, meantime, for evidence of stenosis of the bowel, or peritonitis."

At this point I wish to digress for a moment, to emphasize the possible danger attached to the administration of high enemas in the treatment of intestinal diverticulitis. Such enemas must be given with the greatest care and with the minimum of pressure. A heavy stream of water suddenly directed against the weakened musculature may cause the wall of the intestine at the diverticulum to give, with resultant bulging of the gut and marked increase in the size of the diverticulum. Another factor associated with the rectal enema in intestinal diverticula is the injection of bismuth. Is it possible that some of the cases of large intestinal diverticula impossible to demonstrate by x ray and yet found, later, during operation may be explained on the basis of the applied force of the bismuth enema? Injection into the gut of heavy pressure from below, which thereby reverses peristaltic action, may cause a constriction of the entrance to the diverticulum which eliminates the sacculation from the field of x ray exposure. In these cases, opaque enemas may be less useful than the administration of bismuth by mouth. Better still, in all cases of suspected diverticula of the intestines, a full set of x ray plates should be made.

Roberts (D.) who agrees with Drueck that medical treatment of diverticula (of inflammatory type) will almost entirely relieve symptoms, in many instances, says that these types do better without laxatives which cause liquid stools; and suggests that weekly or biweekly doses of barium or bismuth, one ounce in emulsion or buttermilk, is exceedingly useful. He prescribes, where there is evidence of subacute catarrhal inflammation, injections of a solution of gelatin introduced into the sigmoid. For severe spasm of a particular part, or even of the entire colon, he says that the urea derivative, luminal, has immediate and absolute effect.

Moutier and Percher report a case of gastric ulcer of the lesser curvature, with a large diverticulum, in a man aged fifty-two. A dose of ten grams of bismuth was given, three times a day, with milk and starchy food. Alkalines were allowed only to relieve pain. In two months the pains subsided completely; a month later (under twenty grams daily) there were no signs of the diverticulum on röntgen ray examination. The bismuth was continued (ten grams a day) for two months longer, and the patient was apparently cured.

I believe that there is a considerable percentage of small, multiple diverticula which seem to cause no symptoms, or very mild symptoms, and which are benefited by medical treatment. However, there must be many more cases than we know today, where the symptoms are legion, but remain unrecognized, or are attributed to other pathology.

While the etiology of diverticula may remain somewhat obscure, the abnormal conditions which arise in the intestines as the result of these sacculations are obvious. Where these intestinal diverticulations are present in the large bowel, it is evident that they must fill with feces, which in such areas of local stagnation often become putrefactive. Distention of the gut, as the result of the backward pressure of the fecal content, occurs (particularly in the cecum) and various degrees of obstruction follow. As a result of this static condition, varying grades of ulceration and inflammation may occur. There is likely to be lowering of the vitality of the individual by autointoxication, as well as the direct effect of the autointoxication upon the structures and tissues of the body. In an earlier paper, reference was made to the close relationship between toxemia originating in the intestinal tract and many, apparently, remote symptoms in the patient. Enlarged or atrophic thyroid glands, "lumpy breasts"; certain types of psychoses; affections of the heart muscle; and chronic abnormal conditions of the digestive organs may be eliminated, in many instances, by the correction of a static condition of the intestinal canal. It is because I firmly believe that a great number of these pathological factors are due to inadequate drainage of the alimentary canal that I wish to emphasize the importance of prompt surgical correction of symptomatic intestinal diverticula which are not relieved by a fair trial of medical measures. In seeking foci of infection, the intestinal tract, as a whole, has not had the attention it merits.

The following cases are cited to illustrate that the causative factor in many and varied abnormal mental and physical conditions is retarded drainage of the intestinal canal, due ofttimes to congenital or acquired bands, kinks, sacculations and diverticulations in the tract. The restoration of the patient to normal by the elimination of these areas of stagnation, is proof of the soundness of the theory.

Case I.—E. A.; female; eleven years of age. This patient came under my care in June, 1916, sent by Dr. Graeme Hammond. The birth and early childhood were normal except for chronic constipation which was present even during babyhood, when it was necessary to give the child an enema almost daily. X ray of the skull showed no abnormality. The family history was negative.

In September, 1915, at ten years of age, the patient had attacks of what was apparently petit mal—as many as twenty a day. She was placed in a hospital where she remained for four months taking a rest cure; on a fruit and vegetable diet for eleven weeks and, later, on a milk diet for five weeks. Dr. Hammond barred out essential epilepsy.

On clinical examination I found distinct tenderness over the head of the colon and the appendix. The large intestine was prolapsed; the cecum was much distended and lay in the true pelvis. X ray of the intestinal tract showed "a delay in the passage of the intestinal content through the terminal ileum, the transverse colon and sigmoid. The appendix retained barium for several days. The colon plates, twenty-two, forty-seven and seventy hours after the injection of the solution, showed that a large amount of the barium was retained in the colon, and dilated the cecum and ascending colon."

Operation was performed June, 1916. The gallbladder was distended and attached to the first portion of the duodenum by a tight band which continued down over to the transverse colon, near its hepatic flexure, which was prolapsed. The stomach was

dilated to an unusual degree for so young a child, the greater curvature extended almost to the bladder. A band, about three inches broad, ran from within an inch of the tip of the gallbladder to the vessels of the gastrohepatic omentum. There was a duodenal kink of marked degree. Just above the cecum, the

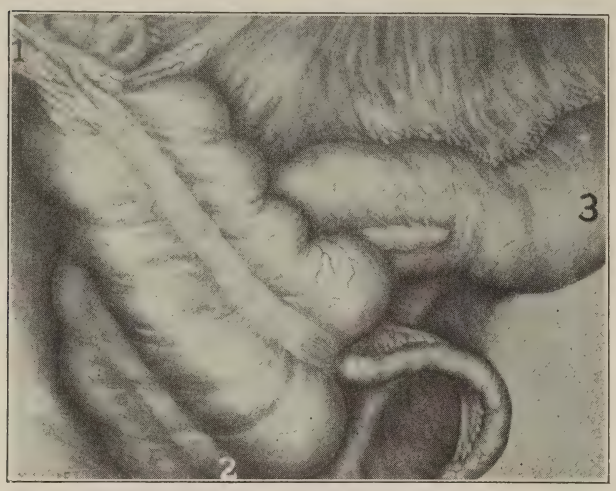

FIG. 7.—Case IX. E. B. 1, band of constriction with malignant disease at site of former irritation; 2, large dilated cecum; 3, distended ileum.

ascending colon was bound down tightly; the hepatic flexure was fused with the ascending colon and the sigmoid was very redundant. There was a large diverticulum of the cecum. The bands were severed; the diverticulum turned in; the cecum was plicated, and the cecum and ascending colon were elevated, rotated outward and anchored to the posterolateral shelf.

Following the operation the nerve condition rapidly improved. The seizures of petit mal were reduced to a minimum and, except for a slight attack at long intervals (and these usually followed a protracted excitement or fatigue), finally disappeared. The patient has remained in excellent health and has made a brilliant record as a student in high school and in her first year of college. She enjoys all the pursuits of the perfectly healthy girl and, on examination in August, 1925, I found her normal in every respect, while a letter received May, 1926, states "that she continues in fine health."[1]

CASE II.—L. B.; female; twenty-four years of age; single. This patient consulted me February 26, 1917. She had a large goitre and enlargement of the heart with systolic murmur at the apex and base. She was very nervous, and complained of almost constant diarrhea and gastrointestinal distress. There was enteroptosis with distinct ileal tenderness. X ray examination showed a kinked terminal ileum and the cecum in the pelvis. The appendix also was kinked and the cecum was markedly diverticulated.

The patient was suffering so much from pressure of the goitre that partial thyroidectomy was performed and the right half of the gland and isthmus removed. However, the abdominal symptoms still caused distress and February 8, 1918, laparotomy was performed; the appendix removed; the ascending colon anchored, and the diverticulated cecum plicated and anchored in normal position. The remaining half of the goitre slowly decreased in size (to normal) after the abdominal operation.

The recovery was uneventful and in January, 1925, the patient reported that there had been no return of the goitre or the gastrointestinal symptoms.

CASE III.—M. B.; female; forty years of age; married; six children. A year before consulting me this patient had pain in the right lumbar region, the right lower quadrant, and soreness throughout the abdomen. She had attacks of nausea at intervals and occasionally vomited blood. On physical examination, distinct tenderness was found over the appendix and resistance over the gallbladder and the duodenum.

Laparotomy was performed April 24, 1917. A band ran across from the greater curvature of the stomach and edge of the omentum, tightly binding down the ascending colon and that portion of the transverse colon which had become coalesced with the ascending colon by intercolic bands, and obstructing the ascending colon. The cecum was badly diverticulated and filled with fecal matter. The last kink was accentuated. The appendix was removed; the bands were relieved, and the large gut was placed back in its normal position.

Convalescence was uneventful. Following operation, all gastrointestinal symptoms disappeared. Word received from the patient, March 3, 1926, said, in part, "that she was in splendid condition and had had no abdominal symptoms since the operation."

CASE IV.—W. B.; male; thirty-eight years of age; married. In 1913 this patient was operated upon for chronic disease of the appendix and intestinal bands and kinks. At the time of this first operative procedure, the condition of the patient was such that, although a partial colectomy seemed necessary, it was considered advisable to try conservative surgery. Following the first operation the patient improved and gained twenty pounds in weight, but he still continued to exhibit symptoms of toxemia (with headache, vomiting at times, and marked constipation). The x ray showed a diverticulum of the ileum, and sites of fecal accumulation in the cecum, ascending and transverse colons, and colectomy was decided upon.

Laparotomy was performed January 7, 1916. The mesocolon was carefully separated from its adhesions, ligated in sections up to and including the splenic flexure; the colon at this point was encircled proximally with a purse-string suture; its stump was crushed, ligated and separated by cautery. The stump was then inverted and secured in position by a double row of Lembert stitches. Raw surfaces were covered by a peritoneal flap. The two inch Meckel's diverticulum of the ileum, which was about twelve inches from the ileocecal valve, was removed. An ileocolostomy with the pelvic colon was done.

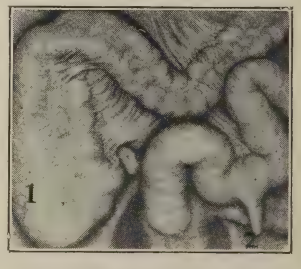

FIG. 8.—Case IV. W. B. 1, large reservoir of septic poison; 2, ileal diverticulum.

Following the operation all symptoms of toxemia disappeared. There were no longer any attacks of

[1]Preliminary report in Bainbridge, William Seaman, The Constitutional Effect of Prolonged Intestinal Toxemia (MEDICAL JOURNAL AND RECORD, October 21, 1925).

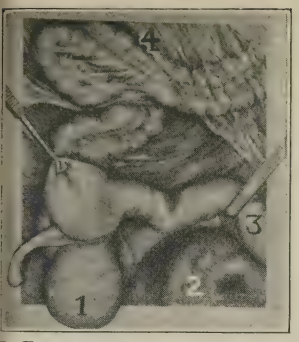

Fig. 1.—Case I. E. A. 1, retrocecal diverticulum; 2, long loop of pelvic colon; 3, dilated ileum; 4, fused portion of colon.

Fig. 2.—Case III. M. B. 1, appendix; 2, diverticulated cecum; 3, band across ascending colon.

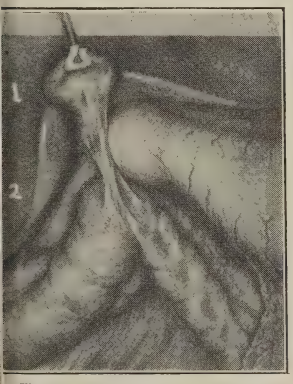

Fig. 4.—Case V. A. J. 1, gallbladder; 2, band to colon.

Fig. 5.—Case VI. K. M. 1, appendix; bands over colon; 3, retrocecal diverticulum.

gastrointestinal distress or vomiting; the headaches and constipation were relieved. The patient's digestion improved greatly. In six months he gained seventy-five pounds.

Since 1916, at intervals, he has reported his continued good health, and on March 3, 1926, he stated "that he has had no recurrence of symptoms and that his cure is entirely complete."

Case V.—A. J.; male; fifty-three years of age; married. This patient consulted me because of severe attacks of constipation; retching each morning before breakfast, and vomiting immediately after each meal. His weight had decreased twenty pounds in six months.

Clinical examination showed a tense epigastrium; stomach and ascending colon dilated and medium tenderness over McBurney's point. After two months of medical treatment, with very little result, surgery was advised .

Laparotomy was performed December 19, 1920. On opening the abdomen there were found a band of adhesions across the duodenum and a tight band from the top of the gallbladder to the common duct and extending downward to the transverse colon, about four inches beyond the hepatic flexure. The cecum was dilated by a retrocecal diverticulum and twisted from without inward and downward. This caused an angulation of the middle of the ascending colon. The bands were cut transversely and sewed longitudinally. The cecum was plicated and fastened to the posteriolateral wall. The raw surfaces were all turned in.

Convalescence was uneventful. The patient recovered and returned to work. The digestive symptoms all disappeared. The bowels became perfectly regular. March 3, 1926, the patient's physician reported that there had been no recurrence of abdominal symptoms, and the patient was in splendid health.

Case VI.—K. M.; female; forty-six years of age; single. For eight years, at intervals of two or three weeks, the patient had acute attacks of abdominal pain. These would commence in the right upper quadrant and spread over the entire abdomen. The attacks were attended by nausea and vomiting and were so severe that the patient's physician, at times, prescribed morphine. Medical measures having been exhausted, operation was advised.

Laparotomy was performed March 3, 1917. On opening the abdomen it was found that there was marked enteroptosis. The stomach was well below the umbilicus—practically at the crest of the ileum. The great omentum was adherent over the descending colon from almost the true pelvis upward to the splenic flexure. This was detached. There was complete rotation of the cecum—the butt end rotated from above downward and from without inward. There was a large diverticulum of the ascending colon, with bands across angulating and obstructing it. These bands were bisected longitudinally. The appendix was removed; the ascending colon and cecum plicated and anchored in the right flank.

Convalescence was uneventful and the patient rapidly recovered. The attacks of nausea and vomiting disappeared, and in the nine years since the operation there has been no recurrence of the epigastric pain, or of the other gastrointestinal symptoms.

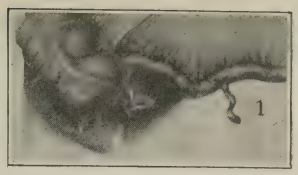

Fig. 6.—Case VIII. P. Z. 1, diverticulum.

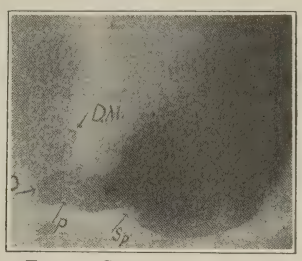

Fig. 8.—Case X. C.C. 1, stomach and first portion of duodenum; sp, gastric spasm; d, first portion of duodenum; dm, diverticulum; p, pylorus. Picture taken within half hour of administration of bismuth.

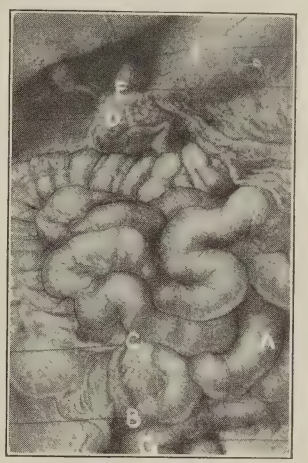

Fig. 9.—Case X. C. C. 2, A, dilated ileum; B, terminal coil of ileum; C, Lane's kink; D. inflammatory mass around first portion of duodenum; E, diverticulum of duodenum; F, dilated stomach; G, pelvic colon.

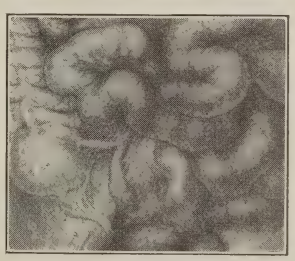

Fig. 10.—Case X. C. C. Lower part of Fig. 9.

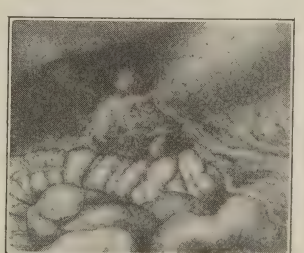

Fig. 11.—Case X. C. C. Upper part of Fig. 9.

Case VII.—M. G.; male; forty-five years of age; married. This patient was markedly constipated and had very severe attacks of epigastric pain which recurred at intervals of a few weeks. He had lost fifteen pounds in three months, and was markedly depressed. Operation was performed May, 1917. There was a very strong band from the base of the gallbladder well down towards the gastrohepatic omentum, causing the cystic duct to be kinked close to the entrance of the common bile duct. The band was attached to the duodenum just beyond the pylorus; below, towards the greater curvature of the stomach, a portion of the band found attachment on the gastrocolic omentum, and the right portion of the band went towards the hepatic flexure of the colon.

The terminal ileum was tightly adherent to the posterior abdominal wall over the brim of the pelvis; the appendix was thickened and lay toward the outer side and underhung a portion of the cecum; below was a cecal diverticulum which was prevented from increasing greatly in size by an adhesion to the brim of the pelvis which bound it tightly down. The bands were bisected; the terminal ileum freed; the appendix removed. The raw surfaces were all turned in.

The patient recovered. His symptoms completely disappeared. In one year he gained forty pounds, and five years after the operation he reported that he was in the best of health.

Case VIII.—P. Z.; female; thirty-five years of age; married. This patient consulted me November, 1908, for pain low down in the abdomen; extreme nervousness and almost constant gastrointestinal distress. Two years of careful medical treatment had caused no improvement in the patient's condition, and operative procedure was advised.

Laparotomy was performed November, 1908. The uterus, which was prolapsed, was brought into normal position by modified Gilliam method. There was a fibrocystic mass in the right ovary which was removed, except for a small piece of healthy tissue. The appendix was the seat of an old inflammation and was thickened, bound down; angulated. Three feet from the ileocecal valve was a Meckel's diverticulum which was ulcerated in two places at the extreme end of the pouch, and was full of intestinal content. This was removed, as was the appendix also. The latter appeared normal.

The patient's convalescence was uneventful. The abdominal pain completely disappeared. She gained in health and strength and for twelve years was absolutely free from symptoms. There was no gastric distress and the bowels moved freely.

In April, 1920, symptoms developed of a growth in the pelvic colon. She consulted a physician, in the Western State where she lived, who palpated a distinct mass in the left side. He performed a laparotomy, but so much pathology was found that no attempt was made to correct conditions.

August, 1920, the patient returned East for consultation. On examination I found a mass as large as a grapefruit in the left iliac region. The mass was tender and painful and not freely movable. Exploratory laparotomy was advised.

Operation was performed September 1, 1920. The omentum was found adherent to the line of the recent incision. At the central portion of the pelvic colon was a carcinomatous mass, about the size of an orange, which narrowed the gut. Sixteen inches of the colon and a wedge of the mesosigmoid were removed. The pathological report was: "Adenocarcinoma, with extensive, acute inflammation of the submucous and muscular coats."

The patient recovered from the operation and returned to her home in the West. She continued in good health for over a year, when she began to show signs of recurrence near the site of the original growth. Colostomy was refused and palliative treatment was instituted. Radium was applied, but the cancer continued to extend and the patient finally died December 5, 1921.

Case IX.—C. B.; female; forty years of age; married. February 9, 1921, this patient consulted me because of recurrent attacks of abdominal cramps and vomiting. These occurred every three or four days with intervals of six or seven days. The vomitus was mucoid at the start; later of the greenish, bilious type; the pain was at the level of the umbilicus and there was abdominal distention at such times. The patient was much emaciated. Examination showed a mass present in the left abdomen; solid; movable. Exploratory laparotomy was advised.

Operation was performed February 12, 1921. The terminal ileum for about two feet was markedly hypertrophied, being about three times normal thickness. The cecum was extremely mobile with very large diverticulations. From the point where the cecum and lower part of the ascending colon rotated downward and inward (where is commonly situated a mass of pericolic bands) was found a very dense band which held the ascending colon together against the posterolateral shelf. On the ascending colon, just where this band was tightest, was a carcinomatous stricture almost completely closing off the large bowel. The cecum was dilated with a mass of fecal matter.

The cecum, ascending colon, hepatic flexure and about one third of the transverse colon, with ten inches of terminal ileum and the appendix were exsected close to the posteroabdominal wall. The cut end of the transverse colon was inverted, with a purse string suture and interrupted Lembert stitches, and the closed end covered over with great omentum. The severed ileum was brought up into position and an end to side anastomoses performed. The meso of the terminal ileum was fastened by interrupted stitches of black linen to the transverse mesocolon so as to close off the opening.

Pathological report was "adenocarcinoma of the ascending colon."

The patient rallied well, and for two years and a half was absolutely free from symptoms. Her bowels moved daily; she gained weight and was perfectly normal in every respect.

August, 1923, she commenced to flow. The discharge was bloody and irritating and gradually increased in volume.

In February, 1924, I was again called in consultation. The patient had had two severe vaginal hemorrhages and was in a very weak condition. On examination I found a mass in the hollow of the sacrum, impinging against the cul de sac and pressing forward at the site of the junction of the vaginal mucosa and the cervix. At this site was an ulcer which ex-

tended through the vaginal wall to the space between the rectum and vagina. The cervix was bilaterally lacerated and presented on each lip an epithelioma. The deep tear in the cervix, towards the right broad ligament, was ulcerated and indurated and the cancer was evidently invading the circular artery.

The patient was in such condition that ligation of the arteries was postponed. The uterus was wiped out with iodine, and the whole ulcerated surface cauterized with Percy and electric cautery and packed with iodoform gauze.

February 15, 1924, the patient was given a blood transfusion (1000 c. c.) and was in very satisfactory condition. On February 16th laparotomy was performed. The right ovary and tube were cystic and bound down to the broad ligament and wall of the pelvis. The uterus was bound down by adhesions to the pelvic colon, and a large tubal ovarian abscess, about the size of an orange, occupied the cul de sac at the left side of the pelvis. The tube, ovary, and abscess with its containing wall, were removed. The left ureter was exposed just below the bifurcation of the left common iliac artery and the left internal iliac artery was ligated in two places, one half inch apart. The artery at the site of the ligation was crushed by a strong clamp; the identation thus formed a groove in which the ligature was placed. The right internal iliac was treated in the same manner.

The cancerous growth was extensive in the floor of the pelvis and developed widely in both broad ligaments. No cancerous disease was found in the abdomen—showing that the two conditions (abdominal and pelvic) were undoubtedly independent.

In September, 1924, the patient returned for examination. She had had no discharge and no recurrence of the hemorrhage. There had been a gain of six pounds since the operation in February. During the year, following this examination, a slight vaginal discharge developed; the patient was treated by x ray. Gradually she grew weaker and died in September, 1925, nearly five years after the removal of the large adenocarcinoma of the ascending colon, and having had no recurrence of malignancy in the upper portion of the abdominal cavity.

Case X.—C. C.; male; forty-seven years of age; married. Three years previous to consulting me this patient began to have attacks of vomiting, lasting several days. These increased in frequency, and when I saw the patient his general condition was very poor, in fact, he was practically starving to death. He complained of constipation, and pain in the epigastrium, four or five hours after eating. He had lost considerable flesh and strength. On examination I found general abdominal tenderness, more accentuated in the right lower quadrant, and much gas. There was marked gastric dilatation. Operation was advised.

On opening the abdomen, December 25, 1913, almost complete pyloric obstruction was found; a marked diverticulum of the duodenum, with a mass of inflammation about it, and adhesions between the neck of the gallbladder and duodenum. There were enlarged glands about the pylorus and back of the liver.

Posterior gastroenterostomy was performed. There was an ileal band which was cut transversely and sutured longitudinally. The appendix was normal, but was removed. There was a small fibroid of the right lobe of the liver at the free margin. This was excised and the liver sutured.

Convalescence was uneventful. The patient gained in weight until he had put on forty-five pounds, and for eight years, following the operation, was in perfect health. In October, 1921, carcinoma of the rectum developed from which he, later, died.

(To be continued)

Distribution and Reactions of Hay Fever

WILLIAM SCHEPPEGRELL, A.M., M.D.
New Orleans, La.

The giant ragweed (Ambrosia trifida, Fig. 1) is generally supposed to be uncommon except in the Southern States, but this is not the case. In St. Louis, for instance, during a visit in 1923, we found a perfect hedge of these weeds on both sides of the road for ten miles from this city to one of its important suburbs. In Pennsylvania, the giant ragweed occurs in great thickets along the flood plains of the rivers, and on the slopes and uplands in great numbers. Even in the mountainous section of the Eastern States it is found in localities where the moisture is sufficient to encourage its growth.

In our classification of hay fever plants, the following are included in the minor groups: Goosefoot family (Chenopodiaceæ), buckweed family (Rumex), amaranth family (Amaranthaceæ), and plantain family (Plantagonaceæ). While these are of less importance than the members of the major groups, such as the ragweed and grasses, many of them have a very wide geographical distribution and, although they are less common causes of hay fever in most locations, they should not be omitted in the diagnostic tests (1).

In some sections, members of the minor groups assume the more important rôle, as for instance the Russian thistle (Salsola pestifer), a member of the Chenopodiaceæ group, whose pollen is an important factor in causing hay fever in the west intermountain district, and the rough pigweed (Amaranthus retroflexus) in Arizona and Southwest.

The pollen of the plantain (Plantago lanceolata) has been specially investigated by Harry S. Bernton (2) who found that five of a series of 116 hay fever subjects in the District of Columbia and vicinity were sensitive to this pollen. He found that preseasonal and seasonal treatment with the pollen extract gave a large percentage of relief.

I. S. Kahn (3) reports that eighty-five per cent. of hay fever cases in San Antonio are due to the pollen of the grasses (Fig. 3). This differs from a report

of the prevalence of hay fever in Northern, Eastern and Southern States in which the ragweeds form the most common cause of hay fever.

In the Sonoran belt in the Western intermountain district, a submountainous country, varying from an altitude of five thousand to seven thousand five hundred feet, H. J. Templeton reports that in his community at least three per cent. of the population suffer from hay fever, and that eighty-three per cent. of all the cases are due to the Russian thistle, the next most common cause being the sagebrush and chenopods.

When skin tests are negative, Ray M. Ballyeat (4) maintains that if these are repeated several times, they may become positive. He asserts that we should go into the homes of the patient and find out his exact environments from the cellar to the attic, and in his outdoor surroundings.

When hay fever patients give negative skin tests to pollens to which they are suspected of being sensitive, I. S. Kahn (5) uses an environmental method of causing the patient to remain in a closed room, and then go out of doors where pollen plates have indicated the presence of pollens. If the patient then succumbs to an attack of hay fever, he considers this a positive test. These cases are treated with desensitization in the usual manner, the results being about the same as in other cases.

FIG. 1.—Giant ragweed (Ambrosia trifida). It is common in moist soil from Quebec to Florida, and west to Nebraska, Colorado and New Mexico.

The skin test is not considered a reliable criterion for the determination of the amount of active substance in ragweed pollen extracts by J. H. Black (6) who prefers the reaction of the nasal mucosa of a ragweed individual. He also believes that none of the methods of standardization of pollen extracts are of value, and that the complement binding substance is apparently increased by treatment.

In a series of 424 cases reported by Andrew A. Eggston (7), 71.2 per cent. were sensitive to weed pollens, with symptoms in the latter part of August and September; 21.1 per cent. were sensitive to weed pollens and grass, with symptoms from the middle of May to the first of October; 6.7 per cent. reacted to grass pollens, having hay fever only in May and June, and one per cent. were sensitive to three pollens, which produce symptoms in April and early May. He found that 95.3 of the late summer cases were sensitive to the ragweed pollen which is very close to the proportionate report in our series of cases in the Department of Hay Fever and Asthma of the Charity Hospital.

In the discussion of fall hay fever, I. S. Kahn (8) states that this is frequently complicated in Texas by the presence of grass pollens, which are usually associated with spring hay fever, and that some of the cases of unsatisfactory results with the ragweed extract is due to failure to immunize against these, also he emphasizes the importane of the Scheppegrell method of pollen plates in this connection.

Piness (9) also calls attention to a similar condition in California where the Bermuda grass again becomes very active in the fall.

Some cases in which the cutaneous reactions are most marked give excellent results. In a case sent to me from Chicago in 1924, each injection was followed by a wheal over two inches in diameter, and which the patient insisted was as large as a "saucer," but which resulted in the patient, who had been a great victim of hay fever, being free of any symptoms the following year. Similar experiences are reported by Piness (10), Rackeman (11), and Bernton (12).

In the desensitization of allergic cases, the injections are usually given in the deltoid region, one arm being used, unless this shows signs of the previous injection, when the other arm should be used. Eggston (13) states that there is a special advantage in using one arm only, as he believes that a local tolerance to the extract is established after two or three injections are given into the same area, and that it is thus possible to increase the amount of extract more rapidly and with less danger of severe reaction. This local tolerance may be due to a retarding of absorption of the extract, or, as Coca maintains, to an exhaustion of the reactivity of the tissues, or probably to local desensitization of the tissues, as explained by Mackenzie. The greatest danger of reactions occurs from the accidental introduction of the extracts into the bloodvessel, or by giving the large doses in a highly sensitive area.

The coseasonal treatment of fall hay fever is advocated by Grafton T. Brown (14) in those cases in which preseasonal has been incomplete or in which there has been no preseasonal treatment.

This is also advised by Vaughan (15), who believes that since the nasal mucosa is irritated, the brunt of the allergic reaction during the pollen season or administration of pollen elsewhere as through the skin, would periodically distribute the pollen throughout other parts, thereby relieving to some extent the intensity of the nasal irritation.

When treatment is administered during the hay fever season, an attack of hay fever is frequently

attributed by the patient to the effects of the treatment. If the attack synchronizes with the increased pollen count as shown by the pollenometric plates (16), this is probably not the case. Constitutional reactions moreover are almost always associated with marked local reactions at the site of the injection, and usually follow within an hour or two of the injection.

In the administration of pollen extracts (17),

FIG. 2.—Pollen of giant ragweed. X 1000 diam.

Eggston reports that in cases in which the single pollen extract fails to give response, a mixture of pollens, which consists of all the pollens combined in the proportion to which the patient gave reactions, should be used. In the fall variety, particular attention is given to both forms of ragweed, the other reacting pollens being considered as minor factors. An autogenous polyvalent extract is used for the spring type, or grass cases. The general observations were that the patients receive better results when a polyvalent extract is used.

In the vasomotor rhinitis cases, desensitization injections were given if allergic reactions were demonstrated. The nonallergic cases responded very satisfactorily to the proper endocrine therapy. Several of the allergic cases gave better results when the injection and endocrine therapy were combined.

FORMS OF ANAPHYLAXIS

If we consider the susceptibility of certain cells to sensitization as a form of potential energy which is easily made kinetic by influences otherwise harmless (18), we can understand the mutual relationships of sensitization and the offending protein, while it also explains the association of hay fever and asthma with such factors as locality, barometric variations, and other conditions which may have a disturbing effect on the protein metabolism.

A large portion of the nonallergic type of hay fever shows indications of endocrine imbalance, and the question of the relationship of internal secretions to allergy is therefore pertinent. Undue taxation of the autonomic nervous mechanism through fatigue, toxemia, faulty metabolism, hypoendocrine or hyperendocrine function will result in sympathetic reactions, of which vasomotor rhinitis and allergy are related expressions.

The expressions of anaphylactic disturbances in hay fever, asthma, certain skin diseases and other manifestations of disturbed metabolism, vary within very wide limits and still more so in degree. We have cases, for instance, in which egg is the only offending substance in asthma and no other article of diet or even atmospheric changes will produce an attack. Other cases in which the common ragweed is the only offender in hay fever and then only to such a slight degree, that the paroxysm develops only at the very height of the pollinating season of this plant.

On the other hand, there are cases in which the offending proteins are extremely numerous. In some cases of hayfever, for instance, patients are sensitive not only to the tree pollens in early spring and the grass pollens in early summer, but also to the cheno-

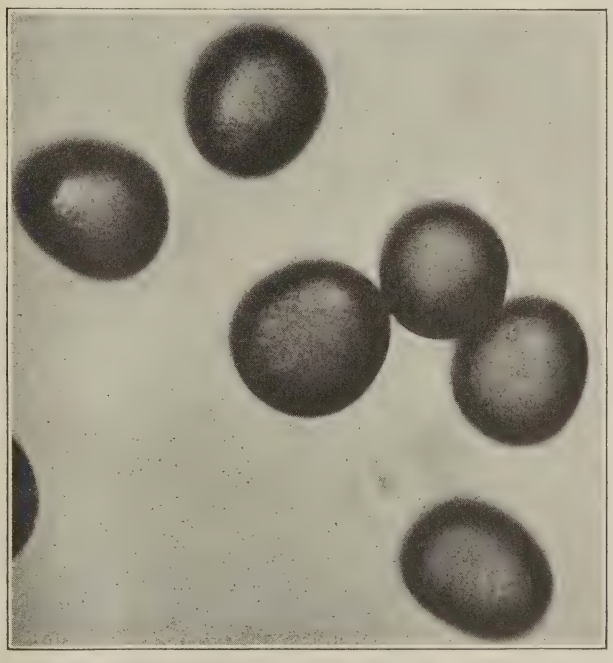

FIG. 3.—Pollen of Johnson grass. The grasses are a common cause of hay fever in all parts of the United States. X 500 diam.

pods and the ragweed, this completing the cycle of hay fever from the beginning of spring to the end of autumn; and some of these hay fever cases are sensitive not only to the above, but also to epidermal and food proteins, which tend to prolong their hay fever season through the whole year and thus establish the perennial type.

While the subjects of the underlying principle involved in the various manifestations of allergic diseases are still subject to discussion, fortunately the treatment of these conditions has made great advances in recent years. This applies specially to hay fever in which the intensive treatment with the glycerol ex-

tract (19) has given excellent results. It has definitely placed hay fever on the list of curable diseases, and the results now obtained compare favorably with those of other diseases.

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Audubon Building.

The Treatment of All Diseases of Vegetable Parasitic Origin by Injection of Mercury and a Recent Important Modification

BARTON LISLE WRIGHT, M.D.

Balboa, Canal Zone

Commander, Medical Corps, United States Navy

In November, 1910, in either the *Medical Record* or the New York Medical Journal, I first published my conviction that in mercury we have a curative agent of superlative value for all of these diseases. Since that time I have had no reason to change my mind, though the brilliant results reported by me then and in succeeding years were not always obtained in all cases treated, yet they were so good as to warrant me in continuing its use.

It was my thought that the salt of mercury (mercuric succinimide) that I used by preference, could not be injected satisfactorily into the average adult male patient in doses larger than ninety-one milligrams (seven and a half grains).

I hoped and believed that sooner or later a compound of mercury would be developed that would permit of much larger doses, and that when found, its administration would be followed by better and more consistent results.

A few years ago, when Young published his first paper on the intravenous injection of mercurochrome 220 soluble, I was immensely pleased, and believed that (by me) long desired form of mercury had at last been developed. But the results obtained by Young and others, reported in current literature, have neither been better or more consistently obtained than those resulting from the deep muscular injections of mercuric succinimide given by me in a variety of infections, among which were included croupous and bronchopneumonia, typhoid fever, the socalled rheumatisms, scarlet fever, measles, colon bacillus infections of the blood stream, iritis, and various skin infections. I have from time to time given much thought as to why more consistent results are not obtained, and at last I have discovered it.

Mercury requires an alkaline media in which to combine and produce the chemical reactions, which I described fifteen years ago, and which are repeated below.

It is well known, and has been repeatedly emphasized by Crile, that the normal alkalinity of the body tissues and fluids is reduced by both disease and shock. The more severe the disease or profound the shock, the greater the reduction in body alkalinity, even acidosis resulting.

It seemed to me that the brilliant results reported both by Young and myself, must have occurred in patients in whom, for some reason, the body alkalinity had not been much reduced by the invading infection, and that the negative results occurred in those where acidity or acidosis had taken place, thereby preventing the chemical reaction taking place which results in complement fixation and the destruction of the invading parasites.

This reaction as expressed by me in my early papers was in two parts as follows:

1. Vegetable antigen+Hg.+complement=rapid antibody formation.

2. Vegetable antigen+antibody+Hg.+complement=complement fixation or rapid cure.

In some of my cases the cure was so rapid (seven hours) that I thought the reaction might be expressed as follows: Vegetable antigen +Hg.+complement= complement fixation.

From my recent experimental work I can now say, given an alkaline, or preferably a hyperalkaline body, and this may readily be obtained by the oral administration of sodium bicarbonate, that the chemical reaction within the patient, as expressed by the above formulæ, will take place with almost constant regularity, when mercuric succinimide in proper doses is administered, and though I have not used mercurochrome in these experiments, I see no reason why the results would not be the same following its administration.

From my recent results I am convinced that we have in this method the very best treatment now available for all the diseases of vegetable parasitic

origin, and perhaps for those of protozoan or other animal parasitic origin.

In treating acute infections, where the necessity for immediate treatment is urgently indicated, give by mouth sodium bicarbonate, three grams before the injection of ninety-one milligrams (seven and a half grains) of mercuric succinimide, two doses of two grams each during the rest of the day. If a second or third injection is required during the next few days keep up the administration of sodium bicarbonate giving six grams during each twenty-four hours.

In chronic infections it is desirable to start the patient on six grams of sodium bicarbonate daily, forty-eight hours prior to the first injection. Give second injection forty-eight hours following the first, and third injection seventy-two or ninety-six hours after the second. During this interval the sodium bicarbonate should be continued. Succeeding injections should be given every seventh day, starting bicarbonate of soda forty-eight hours before the injection and continue giving it throughout the day of injection.

Six or eight injections in most cases will prove sufficient, but in more resistant cases, such as tuberculosis, after the sixth or eighth injection discontinue the treatment for a month or six weeks, and then resume it.

From what I have seen I believe that this method will restore mercury to the front rank as an antisyphilitic agent.

An intriguing hypothesis in connection with this method is possible:

Is the problem one of physiological or biological chemistry, as I think it is, or have we bipolarized the medium (body) in which the reaction takes place, generating an electric current within the body destructive to all parasitic life?

If the future develops an affirmative answer to this question, then Crile's prophecy made in his London address some years ago has been fulfilled.

In conclusion, a three per cent. solution of sodium hyposulphite, applied to the gums by applicator, or used as a mouth wash twice daily, will quickly relieve any mercurial gingivitis that may develop.

ADDENDA

Additional information relative to the administration of mercuric succinimide following the first injection:

After the first injection of mercuric succinimide gm. 0.091 (gr. 7.5), succeeding injections should not contain more than gm. 0.065 (gr. 5.5), and in the dose and spacing of these succeeding injections the physician must be guided by the symptoms, if any, of mercurialism presented by the patient.

In females the first injection should contain gm. 0.065 (gr. 5.5) and the succeeding injections not more than gm. 0.052 (gr. 4.5).

The Prevention of Socalled Bathers' Ear

GEORGE B. McAULIFFE, M.D.
New York

Despite all the propaganda of aural hygiene we have every summer a large number of middle ear inflammations occurring among bathers. It would appear that the hygienic advice was faulty or incomplete, inasmuch as it does not prevent aural complications.

The inflammation varies from a mild tubal catarrh, with its annoying aural disability, to a severe tubotympanitis, with the sequel of mastoiditis. Salt water seems to bring more cases than fresh water—probably because most of the swimming is done in salt water.

Rigid inquiry rarely elicits the causal factor, because the result and cause are not obvious to the patient. The laity from time immemorial have felt that the trouble came from water getting into the canal, on account of the occasional temporary deafness which follows the retention of water in the fornix of the canal adjacent to the drum membrane. It is obvious, however, that the water gets into the Eustachian tube and tympanum. Why is it that this accident only occasionally happens? How does the water get into the tube?

In order to get some information on this subject I sent a questionnaire to the prominent amateur swimmers of the New York Athletic Club. They are all well known experts in swimming and diving. Their testimony is interesting. I received thirteen replies.

A. L. Downs has been swimming for twenty-eight years in salt and fresh water. After ten years of swimming he had a slight deafness and discharge which he attributed to the dirt in salt water. He was in the habit of blowing his nose after coming out of the water. The hearing of one ear is damaged. He has had no mastoiditis. He finds that swimming increases the secretion of cerumen. While diving he uses rubber plugs coated with vaseline. Tank swimming is not injurious if a frequent change of water is made. In his opinion, and in that of many of his associates, outdoor or salt water swimming causes more ear trouble than indoor or tank swimming. This is owing to the impurities in salt water.

J. L. Davidson has been swimming for twenty years in both salt and fresh water. He has never had any ear inflammation. He has been diving in competition for fifteen years. He never uses protective plugs. He had been told by professional swimmers, such as Matthew Mann, that if he did not use ear plugs in diving he would have ear trouble. So far he maintains they have been wrong. He finds no difference in the effect of salt or fresh water. He does not blow his nose when coming out of the water, but he blows out his ears (?). While he has never experienced any untoward effect from the swimming he believes that tank water is dirty and provocative of boils.

J. W. Smith is a swimmer of twenty years' standing in both kinds of water. He has never had any ear complications. He never uses any protection.

He finds that salt water increases the nasal secretion and thinks that salt water is more apt to affect the ears than fresh water.

G. W. Dahm has had fifteen years' experience in both salt and fresh water. He blows his nose after leaving the water. His hearing is slightly affected, although he has had no obvious inflammation. He never uses any protection.

H. Vollmer has been swimming in salt and fresh water for thirteen years. He never had any ear trouble until 1924 when he was kicked in the left ear during a game of water polo. The ear was treated and has given no trouble since. He never blows his nose after swimming. He uses lamb's wool as a protection. He prefers salt to tank water because there is generally too much alum in the latter.

C. LaForge has been a swimmer for five years. Six months after he began he had an otitis externa and an otitis media which was cured. His hearing is unaffected. He does not blow his nose after swimming. Diving never affects his ears. He likes to swim in tank water.

L. deB. Handley has been swimming almost daily for thirty years in both kinds of water. Once he had an accumulation of wax which caused an inflammation of his right ear (?) and both ear drums were broken by blows during a game of water polo fifteen years ago. Since then he has used cotton as a protection, putting a fresh piece in the ears on emerging from the water to absorb residual moisture. His hearing is good. He likes tank water and finds no difference between salt and fresh water in their effect on the ear.

C. Ross has been swimming for ten years generally in fresh water. He does not blow his nose after emerging. He uses no protection. He has had no ear trouble from swimming.

J. Curran after fifteen years of swimming has had no ear disease. His hearing is perfect. He does not blow the nose after leaving the water and uses cotton as a protection. He finds cold water increases the secretion of cerumen.

R. M. Rutter has been swimming thirty-four years. Fourteen years ago he had "ear trouble" which he does not describe. He attributed it to impurities in the water and thinks salt water more harmful than fresh. He does not blow his nose after swimming. He uses soft rubber ear protectors and maintains that his hearing is normal.

C. Trubenbach is a veteran swimmer of thirty-four years' standing. He had both membranes ruptured in water polo but his hearing is good. Diving never affects his ears. He uses cotton as a protection and also prefers tank water.

A swimmer, whose name has been lost, has thirty-two years of competition to his credit. He has been swimming altogether thirty-nine years. Eight years after he began he had otitis media which he attributes to diving and under water swimming. His ears were affected for twenty years but are all right at present. He thinks diving hurts the ears. Has always blown his nose after swimming. Used cotton as a protection and finds salt water more harmful to the ears than fresh water.

If we analyze these statements of swimmers, who know no more than the ordinary laity of the hygiene of the ear, we find that swimming rarely affects the ears. Most of the cases of ear infection are found in the infrequent swimmers—the summer bathers. It is noticed that salt water is more deleterious than fresh water. It may be that salt water which to fishes is a veritable soup, due to the pelagic plankton, is irritating if not septic. It is also seen that salt water causes a rhinal discharge which induces blowing of the nose. This gives the hypertonic salt water an opportunity to be forced into the Eustachian tube. Fresh water, if under proper tank supervision which looks after frequent renewals, sterilization with actinic rays or chemicals, is comparatively harmless, inducing occasionally a tubal stenosis when pent up in the tube by the difference in osmotic balance.

We find that the majority of swimmers do not blow the nose. Therefore, outside of swallowing when the water is in the mouth no opportunity exists for the entrance of fluid into the middle ear. Of course a perforation of the drum membrane will admit water into the middle ear if plugs or proper protective substances are not used. Rubber plugs coated with vaseline are occlusive. Wool, also, which has fat and is therefore not hygroscopic, is useful.

In a healthy ear the use of plugs is not necessary, as is seen in the statement of Davidson who has been in competitive diving for fifteen years.

SUMMARY

Of all these swimmers eleven maintain that diving is not injurious to the ears. One who swims under water and dives thinks that diving hurts the ears. Two of the three who blow the nose after emerging from the water have had ear inflammations. Two of the thirteen swimmers have damaged hearing. Five swimmers used no protection. Not one had any ear trouble. Five used cotton. Three of these had some ear affection. Five who used rubber plugs had ear inflammation of long standing. None had mastoiditis. Eight thought that tank water was good. Four thought it might be deleterious. Three of the four attributed the changes to dirt, one to superfluous alum. Two found swimming increased cerumen. Ten did not find this to be a fact. If we sum up these points we find: that diving does not affect the ears; that protective appliances are not necessary; that salt water is more harmful to the ears than fresh water for swimming by reason of its tumult which increases the chances of its being forced into the nasopharynx and tubes, or by reason of its provocation of nasal secretion—an effect which renders necessary the blowing of the nose with possible entrance of the salt water into the Eustachian tubes.

CONCLUSIONS

The conclusions drawn are: 1. That bathers should not swallow water while swiming because swallowing opens the tubes and the water may gain entrance into the middle ear. This effect is similar to that of a faulty use of the nasal douche. 2. When bathers come out of the water they should let the water drain from the nose. Blowing should be avoided. If blowing the nose and swallowing are interdicted no ear complication will occur. 3. That the only time an occlusive protector is necessary is when there is an open perforation or when the skin of the canal is irritated by the water. Rubber plugs or wool are the best protectors.

26 West Eighty-seventh Street.

The Nature of Hemophilia and Its Etiological Treatment

HARALD v. SAMSON-HIMMELSTJERNA, M.D.
Reval, Esthonia

The following explanation of the hemophilic symptoms makes no assertion of bringing evidence that the causes fundamentally underlying hemophilia are actually such as will be explained, but it will be shown that there may possibly be one point of view, in which the apparently contradictory phenomena of this insidious disease may find an explanation.

How can we explain the remarkable fact, that the bleeder, at the time when the disease is manifestly evident (let us call this the time of the predisposition to bleeding in short), shows no signs of coagulation in the wound, that in the majority of cases the coagulation appears distinctly retarded even extravascularly at the beginning of the bleeding, that with increasing loss of blood and with increasing enrichment of thrombokinase in the escaping blood this approaches more and more the coagulation time of the normal individual, and finally even normal values are reached extravascularly, but that the wound keeps on bleeding irresistibly without the formation of a thrombus?

The blood circulating within the bloodvessels of a healthy person contains antiferments, which prevent coagulation within the bloodvessels under normal conditions. If the blood escapes from the bloodvessels, or if there develop within it the same conditions, such as are known as prerequisites for the formation of a thrombus, these antiferments are destroyed and coagulation can occur. According to my opinion, a substance is formed within the diseased tissues of the bleeder at the time of the predisposition to bleeding, which also exerts a conserving effect upon the antiferments in addition to an injurious effect upon the bloodvessels. Its action is purely limited locally and is confined to the site of formation of the antiferments, that is, the diseased tissue, or, what is the same, to the wound surface. As we can find no substance in the blood of the hemophiliac even during the time of the predisposition to bleeding that would be able to retard the coagulation of normal blood, we must assume that such is not poured out in the blood. This substance (let us call it the conserving substance) will also exert its influence at the wound surface when the extravascular coagulation during a hemorrhage shows fairly normal values as a result of the addition of thrombokinase from healthy tissues or tissues only slightly damaged. These facts force us to the conclusion that the tissues of the bleeder produce this conserving substance to a marked degree, that is, in a marked degree different from that occurring in the hemophilic patient. It is certainly striking that the internal organs bleed only very rarely in most bleeders, and therefore their bloodvessels must have a normal or almost normal structure. We must, therefore, differentiate between tissues that are severely, slightly and not at all affected by the hemophilia.

The tissues that are only slightly affected by the hemophilia produce, the less severely they are affected and hindered from the formation of thrombokinase through the production of conserving substance thrombokinase, which escapes into the blood stream the more readily, even following the stimulation of small losses of blood. We assume, that in the beginning there is a certain neutral intermediate stage, in which neither conserving substance nor thrombokinase is formed.

The tissues not affected by the hemophilia produce thrombokinase in an entirely normal manner, which can become active at the wound surface following an injury and even there lead to normal coagulation. It is a well known fact that the inoculation injuries inflicted upon a bleeder in the vast majority of cases bleed only for a short time, which leads to the conclusion that the outer layers of the skin are not affected by the hemophilia in most cases. These tissues that are not affected by the hemophilia, however, for some unknown reason, are not in a position to pour out thrombokinase into the blood, at least not in the majority of cases. Only the stimulus of a loss of blood, or, as will be shown later, the stimulus of an injection of blood, enable them to pour out thrombokinase abundantly. This anchoring of the thrombokinase in the tissues is also observed normally in birds: the extravascular coagulation proceeds slowly, whereas that at the wound surface proceeds rapidly. In the bleeder this relationship is plainly evident during the time of the periods of recovery; clinically, the patient appears healthy, but biologically he shows the first sign of danger—the escape of thrombokinase into the blood is deficient. Opitz was enabled to demonstrate experimentally this more difficult escape of the thrombokinase in the bleeder in the blood cells, which form thrombokinase just as do the other cells of the body.

During the period of the predisposition to bleeding the bleeder shows hemorrhages in the skin, the subcutaneous tissue, the joints, and in the mucosa of the nose and the mouth. If an external hemorrhage occurs, the wounds bleed in the characteristic uncontrollable manner. Therefore, in the majority of cases, we can consider these tissues so severely affected by the hemophilia, that they are not able to form thrombokinase in response to the stimulus of the loss of blood, and the described stimulus cannot even produce a neutral intermediate stage, in which the wound surfaces, like every indifferent rough surface must lead to the formation of a local thrombus as soon as the escaping blood contains normal amounts of thrombokinase—in other words, as soon as the extravascular coagulation has reached normal values. In these severe forms of hemophiliac disease, however, a simple remedy is effective: the injection of even a small amount of alien blood. As will be shown later, I consider this administration of alien blood at the same time as a stimulating remedy, and assume that it exerts a far more powerful stimulus to the formation and throwing out of thrombokinase than the stimulus of the loss of blood. The stimulus of the administration of blood apparently reaches the severely affected tissues in the majority of cases and there produces either a neutral intermediary stage, or

even the formation of thrombokinase. In the less severe cases, the stimulus from the loss of blood in a given case will reach even the tissues affected by the hemophilia most severely and produce there at least a neutral intermediary stage. According to my understanding, the facts mentioned speak in favor of the assumption, that in the tissues affected by the hemophilia not only is a deficiency of the thrombokinase formation to be expected, but that we must assume the existence of a substance that does not allow the thrombokinase of the escaping blood to become effective at the surface, which conserves the antiferments in a purely local way. The subject of the part played by the injury of the bloodvessels, to which has been ascribed a dominating influence by many investigators, will be discussed later.

It has been mentioned above that the tissues of the bleeder are affected by the hemophilia certainly in various grades of severity. I will now discuss this in greater detail. I can in no way subscribe to the view so often expressed, that the internal organs bleed rarely only because they are protected from external insults. We see the subcutaneous, articular, nasal and oral hemorrhages occur almost spontaneously during the time of the predisposition to bleeding, and in individual cases not even the slightest trauma is demonstrable. It is very evident that a severe attack of coughing, every act of vomiting, and even any act of difficult defecation may exert much severer strains upon the internal organs than the frequently problematical, minimal traumas which cause the diseased tissues to bleed. Hemophilic hemorrhages occur rarely in the organs that have an abundant blood supply, like the lungs, stomach, and intestine, and these organs are healthy or only slightly affected by hemophilia in the majority of bleeders. In some bleeders we see the sudden occurrence of most severe renal hemorrhages without any visible cause. These very kidneys are protected to an exceedingly great degree from external insults far better than the rest of the internal organs, with the exception of the brain, the spinal cord and the bone marrow. In such a case we must assume that the kidneys are seriously affected by the hemophilia in the same way as the deeper layers of the skin or the articular surfaces. Naturally, the thought, that the different organs in one and the same bleeder may be seriously affected by the hemophilia during different periods of the predisposition to bleeding, cannot be easily set aside. But how can we explain the fact, that in the bleeder we not rarely see the hemorrhage cease after slight injuries, and yet the extravascular coagulation is distinctly retarded? Either the injured tissue is not at all affected by the hemophilia or only to a very slight degree and produces thrombokinase in a normal or almost normal manner, or the injury has occurred accidentally in the initial stage of a period of recovery, in which even the tissues severely affected by the hemophilia produce thrombokinase in a normal manner without being able to pour it out into the blood. Special attention is called at this time to the striking periodicity of this malady.

I once examined a bleeder, who several days before had a medium sized subcutaneous hemorrhage, which appeared without any recognizable cause. To my great surprise it was found, that a small wound made by me on the extensor surface of the arm bled only eight minutes and that the extravascular coagulation proceeded in an absolutely normal manner. Several months before that the patient bled for almost a day from a very small wound on the finger. The coagulum of blood showed the loose consistency characteristic of bleeders and swam freely in the expressed serum. It appeared to me unlikely that the subcutaneous hemorrhage mentioned could have poured out such an abundance of thrombokinase with a normal extravascular coagulation, as, in the first place, the hemorrhage was not severe, and in the second place, it had already appeared several days before. Several days after the examination the mother of the patient informed me that a subcutaneous effusion of blood had developed at the site where I made the wound. The slight pressure exerted by me while lifting a fold of the skin was sufficient to produce ruptures of the bloodvessels. After a short time the tendency to hemorrhages disappeared completely, and I cannot believe that the small, lively patient, two and a half years of age, did not occasionally slightly bump himself at some time during the long convalescent period of about six weeks. After about six weeks another aggravation in the condition occurred with numerous subcutaneous hemorrhages and an articular hemorrhage, similar to the one that occurred before. Unfortunately, the little patient slightly injured his tonsil while at play and died from a hemorrhage. I am sorry to say that I was enabled to examine the patient only once and I therefore cannot say whether the extravascular coagulation in this case was normal or not. The fact that during the examination almost normal conditions (a bleeding period of eight minutes instead of one to three minutes) prevailed at the wound surface, whereas there was distinctly demonstrable a vascular injury which disappeared later.

I believe that I may attribute to the fact that the bloodvessels injured by the conserving substance remain fragile for a long time, and that the components of this substance which injure the bloodvessels has a persistent action long after the substance itself has disappeared from the tissues and the formation of thrombokinase has begun. By some investigators, the vascular injury, but according to my conception, the components of the conserving substance that injures the bloodvessels, are ascribed the dominating part in the phenomenon of the obstreporousness of hemophilic bleeding. Admittedly, there are disease conditions in which a vascular injury alone leads to serious hemorrhages, and one needs to think only of the hemorrhages in scurvy. What is more natural than to assume the existence of the same cause in the incontrollability of hemophilic hemorrhage. I believe that the undoubtedly existing components of the conserving substance that injure the bloodvessels can be given only a subordinate part, and that for the following reason. The injection of only a few cubic centimetres of alien blood during a hemophilic hemorrhage leads to the desired result in most cases in a short time, a thrombus forms, and the hemorrhage ceases. I believe that it is entirely unimaginable that we could heal a vascular injury by the injection of this small amount of blood in a very short time. We see, as the case cited by me shows, that the vascular injury disappears only after the period of improvement has lasted several days. The effect of adrenalin, which would be able to exert a rapid effect upon the

vascular walls from the injection of the alien blood, does not deserve consideration. But we must certainly admit a moderate prolongation of the bleeding period as a result of the vascular injury, as I have also observed this in the case cited by myself.

It might be well to mention the fact, that definite cures of this malady have been observed when the patients have been exposed for long periods of time to the effects of mountainous or tropical climates. What have these two factors, mountainous and tropical climates, in common with each other? So far as we can determine, only the one element—intensive insolation. The extensive surface of the external skin, of which the deeper layers are very often affected by hemophilia, is the tissue that is mostly and most immediately exposed to the sun, and it may therefore be assumed that solar irradiation has the ability of preventing the further formation of the conserving substance in the skin, without the development of recurrences. But some other curative influences upon the other tissues that are affected by the hemophilia must emanate from the large surface of the skin, or otherwise some isolated articular hemorrhages must be left behind. I wish to call attention to the fact, that it has been very generally noticed that the skin of many bleeders is abnormally tender. In this connection, this finding deserves special consideration and indicates that this organ might be accorded a special significance in the pathogenesis. Attention is called to the possible favorable influence upon this disease of suitable heliotherapeutic measures (mercury quartz lamp).

Another phenomenon also deserves closer consideration. If we inject only small amounts of alien blood into a bleeder, who shows practically normal extravascular coagulation during the hemorrhage and whose blood must therefore contain normal amounts of thrombokinase, the best result is often seen: the bleeding ceases in a short time, and a thrombus forms. This injection of blood is made originally with the intention of administering to the blood of the bleeder a considerable amount of thrombokinase and thereby to produce coagulation in the wound. According to my conception this belief is incorrect. If we inject this alien blood at the moment when the extravascular coagulation already shows normal values, we in no way change thereby the thrombokinase content in the blood of the bleeder, as what we inject is blood having the same thrombokinase content as the escaping, already extravascularly, normally coagulating blood of the bleeder. But with the injection of blood we have done something entirely different than administered thrombokinase—we have injected a foreign protein, a well known shock producing body. This shock body acts much more intensively than the stimulus from the loss of blood and reaches even to the tissues that are severely affected, where the further formation of the conserving substance is inhibited, and there results at least a neutral intermediary stage, in which the wound surface acts as an indifferent rough surface to which thrombi may attach themselves as soon as the escaping blood shows a normal extravascular coagulation. Recent literature has shown distinctly enough how the parenteral administration of a shock body can considerably accelerate a slowly progressing reaction of an organ or system of organs in a short time. The production of thrombokinase in the healthy tissues occurring as a result of the stimulus of the loss of blood, and the effect upon the tissue affected by the hemophilia in the sense of a formation of thrombokinase, we can consider as only a tardy and insufficiently intensive reaction.

The results from röntgen irradiation of the spleen must also be considered as an effect of shock therapy. A large amount of thrombokinase is certainly set free through the functional disturbance of the spleen following the irradiation and the massive destruction of the red blood corpuscles incident thereto. But this factor does not appear to me to be the important one. It has been known for a long time that the intramuscular injection of the patient's own blood, as a result of which there is a destruction of the individual elements of the blood, develops a shock therapy. With irradiation of the spleen large amounts of red blood corpuscles are suddenly destroyed, the decomposition products of which may well act like a foreign protein (shock body), just as do the decomposition products of the patient's own blood following their intramuscular injection. It would be interesting to attempt a peroral shock therapy at the beginning of a tendency to bleeding for the purpose of preventing further hemorrhages.

On the basis of the observations mentioned above and the fact that the thrombokinase is present in the blood of the bleeder in individual cases even in large amounts without a loss of blood having preceded it, we can state that the true nature of this disease lies neither in a deficient formation nor in a deficient escape of the thrombokinase, but in an involvement of individual tissues which occurs in attacks and is characterized by the production of a conserving substance that injures the bloodvessels.

Now to the consideration of the treatment. An etiological therapy must be able to permanently prevent the formation of this conserving substance, which we believed must be assumed to be the cause of the imminent hemorrhages. At the present time we are still entirely ignorant as to what force produces the regularly observed spontaneous periods of improvement, so that we cannot artificially strengthen or produce it. We have discussed the results to be possibly expected from heliotherapy and shock therapy.

But there is also another possibility of forcing this sinister disease into the circle of diseases that are definitely amenable therapeutically. From time immemorial, the remarkable fact has been noted that the women of bleeder families have remained free from this disease throughout their life, but that their sons are afflicted with it with great regularity. Recent investigations, however, have shown that certain anomalies (resistance of the red blood corpuscles, an increased chlorin content, and the absence of trypanocidal substance) are demonstrable in the blood of women in bleeder families, but a manifestation of the disease, as characterized by hemorrhages that threaten life, have never, or, to be more careful, almost never been observed. This circumstance leads to the conclusion that the female body has at its disposal very powerful protective bodies, which prevent a manifestation of the disease, that is, make the formation of conserving substance impossible. This thought led me to attempting some experiments on

the influencing of the organism of bleeders by ovarian hormones, and thereby, to a certain extent, to produce the condition of an artificial hermaphroditism. At first I wanted to attempt it with a peroral administration of ovarian hormones, but with their failure there still remained the implantation of an ovary. At my request chemical houses manufactured an ovarian preparation by most careful methods, which contained all the hormones of the ovary of the cow. I selected this animal because hemophilia has been observed in cattle and I therefore hoped to find in them a specially effective preparation. In order to be able to study any possible developing undesirable effects, I first tried the experiments on myself (age thirty-seven years). During the first four weeks I regularly took by mouth an amount (divided into four portions) that corresponds to 3.0 grams of fresh ovarian substance. During the next two weeks I increased the daily amount to one corresponding to 6.0 grams of fresh ovarian substance, and during the last eight weeks a dose corresponding to 15.0 grams. I took this preparation regularly in the forenoon at 7 and 12 o'clock, and in the afternoon at 5 and 10 o'clock, in order to obtain as uniform an effect of the ovarian hormone as possible throughout the entire day and night. Exactly thirty days after the beginning of the experiment I noticed a slight sticking sensation in both nipples, which lasted several hours. These sticking pains repeatedly recurred later during the period of the experiment, about every two to five days. I was unable to discover any hypertrophy in the region around the nipples or in the nipples themselves. Naturally, one cannot definitely decide whether the slight sticking pains in the nipples should be considered as being due to the ovarian hormones or not, but for me it is certainly noteworthy that, as far as I can remember, I never before experienced such sensations. In spite of the most careful selfobservation, I have not been able to find any other perceptible effects.

As far as one can determine from a single observation, there are no noteworthy undesirable byeffects in the adult male organism from the continuous peroral administration of ovarian hormones. I conducted no experiments on the organisms of children. Some opinion may, however, be formed from a large series of experiments on animals (1). Krause implanted into young male guineapigs different sized pieces of ovaries from the same species of animals, some of these animals having been partially castrated. After variously long periods of latency distinct female sexual characteristics, which were expressed in a hypertrophy of the teats and milk glands, developed in one third of the cases. In not a single case, however, could a suppression of the development of the male sexual characteristics be demonstrated. It appears to me that these experiments suggest the propriety of administering ovarian hormones also in children.

I am sorry to say that I must leave to others the task of testing experimentally the correctness of the above mentioned theories as to the nature of hemophilia, and, unfortunately, I have been denied the privilege of testing the applicability of the above mentioned therapeutic possibilities on patients. Anxiety and the lack of understanding in the few bleeders whom I have been able to reach have robbed me of this possibility. Before any final opinion regarding the value and futility of the therapeutic measures indicated can be rendered, these experiments would have to be carried on for a long time.

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Immunization Against Scarlet Fever*

HARRY S. SNYDERMAN, M.D.

Philadelphia

Scarlet fever is one of the many serious diseases of childhood. The mortality is rated fifth among the most fatal ailments in children under ten years. The complications add to the dread of this disease, and the late appearance of renal and of cardiac sequelæ and of frequent involvement of the ears and glands increases its gravity.

To determine the susceptibility to or the immunity from the disease in any individual we now have the Dick test, which is similar to the Schick test, used for determining susceptibility or immunity to diphtheria.

The Dicks have obtained a toxic filtrate by growing the scarlatinal streptococcus on blood agar slant. The condensation fluid which is passed through a Berkfield filter contains the toxin. This fluid injected into normal persons gave a positive reaction in those who never had scarlet but who are susceptible and gave a negative reaction in those who had the disease.

The Dicks further report that they obtained active immunity in persons who were positive after giving them three injections of ascending doses of this filtrate, properly diluted.

The Dick test consists of an intracutaneous injection of 0.1 to 0.2 of the soluble toxic filtrate, properly diluted.

The dilution varies from 1-500 to 1-2000 in physiological sodium chloride. It is more stable than diphtheria toxin. It can be kept under proper temperature for a long period and is therefore distributed already diluted and ready for use.

The reaction can be interpreted differently, depending upon its severity and the area involved. Some classify it as slightly positive, where the area involved is less than two cm. in diameter and without swelling; positive where the area involved is from two to three cm. in diameter and is bright red in

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color and there is also some swelling. The reaction is said to be strongly positive where the area involved is more than three cm. in one or both diameters and intensely red and is associated with marked swelling and induration.

Another classification which is used by many depending upon the area involved and the amount of induration is (x) (xx) (xxx) and (xxxx). I find this classification the most convenient and in my work I have called any redness at all a positive reaction. I did this because I wanted it to be absolutely negative over a period of time, so that the patient could be retested after a period of observation.

The local effect of the scarlet fever toxin is more rapid than the Schick. It begins to appear from four to six hours after the inoculation, at first as a small circular area of erythema, which increases in size and reaches its maximum between eighteen and thirty-six hours.

After reaching the maximum it begins to subside and even the most severe positive does not persist more than forty-eight hours. The bright red color becomes dull and begins to fade. I have had many positives appear within thirty minutes after injection and these all proved to be strongly positive and persisted for forty-eight hours.

The negative reaction shows no change at the site of the toxin injection or at the site of the control; these persons we believe are immune to scarlet fever.

RESULT OF THE DICK TEST

The test was applied to children varying in age from three to sixteen years. In all I have tested 1,467 persons on whom I did over ten thousand tests within the last sixteen months, with material obtained from different biological houses, with the following results:

Age	*Total Tested*	*Dick Positive*	*Dick Negative*	*Percentage Positive*
3- 4	197	88	109	45
4- 5	224	83	141	37
5- 8	364	128	236	35
8-10	251	76	175	30
10-12	202	47	155	23
12-16	229	40	183	20
	1467	462	999	31

The table above represents the results of the tests on children in public institutions; 156 tests done on private patients and the private school which gave a much higher percentage.

Age	*Total Tested*	*Dick Positive*	*Dick Negative*	*Positive Percentage*
6-16	156	104	52	66

Results in families: Wherever I obtained a positive and a negative in the children of the same family the negative was always in the older child but usually they were positive in all. In one family where I treated a scarlet fever case I tested the rest of the children. They were all negative with the exception of one brother two years older. This child developed scarlet fever three weeks later. At no time in my experience did the test prove positive where there was a positive history of having had scarlet fever.

ACTIVE IMMUNIZATION WITH SCARLET FEVER TOXIN

I have injected all children who gave a positive reaction. Four injections were given at weekly intervals. All children were under the care of trained nurses and temperature was noted every three hours for forty-eight hours. The local reaction consists of redness and swelling at the site of injection and appears about thirty-six hours later. The first injection gives the severest reaction, though the following injections are much stronger. In a small percentage of children injected the local reaction was rather severe and the children developed temperatures from 100° F. to 102° F.; the arm was red and much swollen. In four cases the arm was inflamed from shoulder to finger tip, while in two instances I noted a scarlatinal rash, covering the entire body with sore throat and marked constitutional symptoms. This now can be eliminated by adding soap solution with the toxin.

DURATION OF IMMUNIZATION

Group 1.—Numbering 136 children, were injected. Children under six received 100, 250, 500 and 1000 skin test doses; children from six to ten, 250, 500, 1000 and 3000. Forty per cent. of these became negative at the end of two weeks and fifty-four per cent. at the end of six weeks. At the end of three months the percentage became less and at the end of fifteen months only forty-one per cent. were negative.

Group 2.—One hundred and seventy children were injected. Children under six received 250, 500, 1000 and 3000 skin test doses. Children from six to ten years 500, 1000, 2000 and 4000. Children from ten to sixteen years 500, 1500, 3000 and 6000. Of these sixty-four per cent. were negative at the end of two weeks and seventy-three per cent. at the end of six weeks, while at the end of four and one half months the number of negatives began to decrease and at the end of thirteen months fifty-four per cent. were negative.

Group 3.—One hundred children under the age of six were given 500, 1500, 3000 and 6000 skin test doses, children from six to ten years, 1000, 3000, 6000 and 12,000; children from ten to sixteen years 1000, 4000, 8000 and 16,000. In retesting, eighty-six per cent. were negative at two weeks and ninety-one per cent. by the end of six weeks. After six months the number of negatives began to decrease and at the end of thirteen months sixty-nine per cent. were negative.

Group 4.—Fifty-six children were injected with 100, 250, 500 skin test doses. Of these forty-two per cent. were negative at the end of two months and only seventeen per cent. were negative at the end of eight months.

Group 5.—Twenty-two children were injected with single doses of 5000 skin test doses. Of these eighty-two per cent. were negative at the end of ten days, and at sixty-eight per cent. at the end of one year. The reactions, however, are more severe.

CONCLUSIONS

The Dick test is a reliable index of determining the susceptibility or immunity to scarlet fever.

Determining the efficiency of active immunization with scarlet fever toxin.

The older the individual the greater are the number of skin test doses required to produce immunity.

Immunity is produced within two weeks after the last injection.

It is not a permanent immunity.

The individual who becomes negative and then positive requires much larger doses to become immune and in such cases immunity is of a shorter duration.

During an epidemic, we have the opportunity of using a valuable preventive agent, as immunity which lasts at least six months and much longer in some instances if produced.

A single injection of a large dose will produce an early and lasting immunity.

2010 Pine Street.

Rectal Feeding

CHARLES J. DRUECK, M.D.,

Chicago

(*Concluded from page* 288)

OPIUM IN THE NUTRIENT ENEMAS

Opium in the form of laudanum (from three to twenty minims) may be added to the nutrient when irritation exists, but it must be remembered that opium inhibits peristalsis and thus favors retention of the enema, and also interferes with its absorption. Whenever this drug is resorted to, the dose must be guarded and its action watched. If the nutrient enemata are continued for a protracted period and the rectum becomes irritated, the opiate often acts better if introduced from one half to one hour earlier. When thus administered separately, the volume is so small that it can act locally before the larger nutrient enema is given. The deodorized tincture of opium or McMunn's elixir may take the place of laudanum.

FOODSTUFFS SUITABLE FOR RECTAL FEEDING

Not all substances administered by mouth are available for rectal feeding. Starches and most of the fats rarely are absorbed from the rectum. Starches partially converted into sugar are absorbed more readily, but not sufficiently so to be serviceable as food. Malt extracts may possibly sometimes be absorbed. Fats and oils are rendered worse than useless by coating the rectal lining as well as the food, thus preventing absorption of the latter. Attempts at saponifying or emulsifying the fats have given very poor, or at least doubtful, results.

It is important to select only such substances for rectal foods as will be entirely, or nearly, absorbed, because all residue acts as a foreign body. However, it has been found that many albuminous foods, although absorbable, act as irritants when given in too great a degree of concentration. Pure peptones, for example, must be diluted with two or three volumes of water or some bland substance. Some albumens, such as of eggs or that made from chopped meat, may be absorbed by the rectum undigested; but even these are better when partly pancreatized.

Albumen is very slowly, if at all, diffusible and must previously be changed into albumose. This may be accomplished by adding pepsin or pancreatic extract to the injection, either some time before administering and allowing digestion to take place outside the body or by adding the ferment just before giving the clyster and then allow digestion to proceed within the bowel. Catillon, experimenting along this line on dogs, found that the animal fed (rectally) on unaltered egg lost weight and barely kept alive, while the one receiving eggs combined with glycerin and pepsin retained its normal weight and apparently its health. After thirty-seven days the pepsin was omitted, whereupon the dog gradually lost weight.

ITEMIZED CONSIDERATION OF FOODSTUFFS

Pancreatized meat.—Pancreatic extract in some form may be employed in preparing proteid food; but it must be fresh, as it does not keep and so is likely to act as an irritant. So, also, glycerin extracts of pancreatin will not do, on account of the aperient action of the glycerin. Leube suggests the addition of one part of fresh pancreas to three parts of beef as the best proportions, the pancreas and meat being finely minced and triturated, after the addition of a little water, until it forms a paste. All adhering fat must be carefully removed. A large nozzle syringe is required for injecting the mass. The principle underlying the procedure, according to Leube, is, that digestion begun outside is continued within the colon; it being only rarely that the substances are absorbed immediately, while in this shape they may be retained in the bowel for as long as ten hours without detriment.

Mayet suggests practically the same formula, only that he adds the yolk of one egg and allows the mixture to stand two hours before administering. Occasionally it is recommended to add to the beef mixture some hydrochloric acid and also milk, but the acid is altogether too irritating for intestinal digestion, and artificial digestion must be carried on outside the body.

Blood.—Dried beef blood has been used as a rectal food, but is not practicable, for it usually clots within the rectum and thus prevents the absorption of other substances. Fresh defibrinated blood, four ounces every six hours may be used, but it is not recommended.

Milk.—Milk is one of the most satisfactory rectal foods. It should be free of all its cream, and digestion must not be too far advanced outside the body.

Eggs.—Egg albumen is one of the best, if not actually the best, ingredient for rectal feeding. It is absorbed from the rectum, even if unchanged, but it is better if predigested with peptongenic or pancreatic powder. Ewald says that egg albumen, unpeptonized, is absorbed as readily from the rectum as commercial peptone, but that peptonized egg albumen

is taken up much better. The addition of fifteen grains of salt to each injection aids absorption, although it sometimes irritates and, hence, must be used with care. The yolk of the egg is not used, because it contains so much fat mixed with the albuminous matter as to be practically useless. Fats can be absorbed only by the villi of the small intestine, and in no other part.

Glucose.—Invert sugar is absorbed in dilute solution. If given in concentration it irritates the mucosa and stimulates expulsive peristalsis. Leube recommends three hundred cubic centimetres of a fifteen per cent. solution as a maximum.

Stimulants.—The agents of this nature employed in rectal feeding are alcohol and coffee. Each represents a different class, with its specific indications.

Alcohol.—When used for rectal feeding, the alcohol must be good liquor, well diluted; the brandy, one half to one ounce being added to the portion just before it is administered, but after the process of predigestion. Being irritants, large amounts of alcoholics must never be added. Many times a small injection of half an ounce of whiskey or brandy in one and one half ounces of water will be retained and absorbed, when a larger amount of fluid with the liquor incorporated would be expelled. Undiluted liquor added to milk sometimes causes a precipitate by coagulating the casein that has not been pancreatized; however, no solid matter, even if in the form of a fine precipitate, is of use in the rectum, for it merely acts as an irritant.

Alcohol stimulates the bowel and increases the absorbability of proteids. One of the strong points in employing liquid peptones is, that they contain the alcohol well diluted—about fifteen per cent.—together with the same percentage of proteids and carbohydrates.

Coffee.—There are times, especially in postoperative treatment, when it is desired to combat shock, even more than to supply nourishment, and here a pint of good strong, black coffee, containing about five to seven grains of caffeine, will afford prompt and effective support. Whenever such stimulation is needed, the pint of coffee may be substituted for the nutrient enema. Coffee may be given much more freely than alcohol, although, of course, all stimulants are really irritants and, if introduced frequently, will render the bowel intolerant.

Here is a good formula for a nutrient enema containing a stimulant:

Beat the whites of two eggs with a tablespoonful of cold water, add half a teacup (four ounces) of a twenty per cent. glucose solution, in which one teaspoonful of starch has been boiled, a wineglass of claret or half an ounce of brandy, and a teaspoonful of peptone solution. Mix at a temperature not high enough to coagulate the albumen (Ewald), I may add that some authorities prefer claret to brandy because of its astringent effect.

ABOUT EMULSIFIED FATS

In the selection of a food for artificial feeding the caloric units which it represents obviously is important, and it would appear that fats and oils would be preeminent. However, clinically it is found that fats are not only not absorbed, but that when administered, they tend to coat the mucosa and the other food, and, thus, prevent absorption. This is most unfortunate, because a given amount of fat produces twice the energy that does the same weight either of proteid or carbohydrate food.

Attempts have been made to saponify the fats before their administration, and Edsall and Miller have carried out some extensive experiments along this line; but they were unable to find a soluble soap that did not contain so much alkali as to make it markedly irritating to the bowel.

The only way of giving fats is in the form of emulsion; but in using milk and the yolk of egg, it is found that the proteids entangle the fats in the coagulum and stop digestion. With the artificial emulsion much better results have been obtained. Malted milk and pancreatized milk have proved very satisfactory, because the fats are very finely divided by these agents. Either of these two powdered milk preparations named—half an ounce dissolved in five ounces of saline solution—usually will be well absorbed, and not irritate the bowel. Considerably more fat is absorbed from a preparation of this kind than might be expected.

I, myself, have had good success with a mixture consisting of half a pint of milk and two eggs (entire) given at one feeding, with the next injection consisting of pancreatized meat solution. By alternating these foods, the patient receives all classes of food substances.

NUTRITIVE VALUE OF ENEMATA

Boyd (6) shows that the patient's capacity of absorption more than the quantity of material injected determines the food value of the enema. A careful watch should therefore be kept to see that no unused portions of the clysters remain within the bowel to decompose and cause irritation. He advises an enema of yolks of two eggs, three grams of pure dextrose, half a gram of common salt and three hundred grams of pancreatized milk. This mixture represents about three hundred calories and if given four times in twenty-four hours makes a total of 1,200 calories, of which 240 to 640 calories may be absorbed.

The amount of nutrient injected each time must be determined for each patient. Some can retain not more than three or four ounces of liquid, and then the clysters must be given more frequently—perhaps every four to six hours. Others will hold comfortably up to eight ounces, and these need not be fed oftener than two or three times a day.

When the enemas are given at frequent intervals it is always necessary to add some opiate, since the rectum is sure to become irritated. However, almost always we shall be obliged to add opium after the first few days or a week, and, as the dose must gradually be increased, it is well to begin with the smallest possible dose, say, five minims of the official tincture.

Sometimes instead of filling the bowel with several ounces at one time it is better to use the continuous drip method. The vessel containing the nutrient enema is suspended one foot above the level of the rectum and the flow tested 50 to 60 drops per minute. The material in the container must be kept at a uniform heat of 120° F., which, with a thirty inch connecting tube, will deliver the enema at 100° F. in the rectum. The catheter should be removed from the rectum after each feeding because this continuous

drip must not be kept up continuously. This method will be found indicated in persistent vomiting and acute hemorrhages.

NUTRIENT SUPPOSITORIES

Suppositories sometimes are used for conveying the pabulum, the most common articles incorporated being evaporated predigested milk or meat juice, with cacao butter as the vehicle. They possess no effective value over enemata but may prove useful where feeding is to be continued for a longer time.

CONCLUSION

In concluding I will add that I do not wish it to be understood that rectal feeding can entirely replace the normal method of ingestion of food, but I do insist that in the proper class of cases, as indicated above, where complete rest of the stomach for a few weeks or less may mean the saving of life, this manner of supplying nutriments will sustain the patient and occasionally even add to his weight. Hunger and thirst are the most annoying symptoms experienced for a few days, but after that the patient is relatively comfortable. The tongue remains clean and moist and the longing for something to eat diminishes and even disappears. But this point I would emphasize—a large part of the success in this work depends upon the doctor's familiarity with the method employed and his skill in carrying it out.

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Backache—Its Etiology and Pathology

SAMUEL KLEINBERG, M.D., F.A.C.S.

New York

Backache is one of the commonest complaints which the physician is called upon to treat. A great many women and many men suffer from pain in the back and disability resulting from a wide variety of constitutional and local conditions. In men, particularly laborers, backache is due more often to some local pathology than to systemic disturbance.

Since the subject of backache lends itself to extensive discussion, as it is symptomatic of many diseases affecting the tissues of the chest, abdomen and back, we propose to limit ourselves to a consideration of a few conditions in which backache is either the chief complaint, or one of only three or four important symptoms. We desire further to consider this subject especially in its relation to industrial injuries.

FRACTURE OF THE SPINE

In this lesion pain in the back is an important symptom; it appears immediately after the injury, and persists for months and sometimes years. It is usually the main complaint, and to the patient the earliest evidence of an injury to the back. The pain, which is ordinarily of moderate severity, is increased by all motions of the body, and especially by forced bending. It is relieved partially or even completely by rest or by support of the back. Immediately after the injury it may be intense or mild; in the later stages it is not very severe, but it is disabling.

The pain is referred very definitely to the site of the injury and is, therefore, diagnostic of the location of the fracture. The painful area is located immediately over the spine and over a short distance on either side of it, and is rarely more than two or three inches square. The pain is stationary; if it shifts about to any extent one may be certain that it is not due to fracture of the spine, unless there are multiple lesions. This localization of pain is an essential feature of the symptom group. The patient always knows definitely where the pain is felt and can point to the spot with one finger. When asked to indicate where he feels pain, there is no hesitation on his part; he does not say "Wait until I see," and does not move his body to make sure of the location. He points promptly to the painful region, which is directly over the injured vertebra.

The interpretation of pain in the back as indicating spinal fracture is facilitated by the presence of other important symptoms, viz., deformity, tenderness, stiffness of the back and positive röntgenographic evidence.

The preceding discussion refers particularly to fractures of the bodies of the vertebræ. In single or multiple fractures of the transverse and spinous processes in which the vertebral bodies are uninjured, there is always a history of a direct blow on the back. The pain may be very mild and not very disabling, but it is always localized. We have seen several instances in which there was no pain whatever. On the other hand, the pain and disability may persist for many months, as it has done in a number of patients under our care. The exact diagnosis can be surmised from the history and physical examination, but can be established only by röntgen ray pictures.

SPONDYLOLISTHESIS

This is a partial or complete dislocation of one or more lumbar vertebræ. Usually there is a forward subluxation of the fifth lumbar vertebra. The chief pain is in the middle of the lower lumbar area but is not narrowly localized; the patient complains of pain in the lower part of his back without pointing to any one spot, as is the case in fracture of the spine. This fact is explained by the nature of the lesion. The essential feature in this injury is, to be sure, a dislocation or subluxation of the fifth lumbar vertebra. Nevertheless, a large number of ligaments connecting the lumbar vertebræ to each other and to the sacrum and iliac bones are injured. The muscles of the back are stretched; the fibres of some may be

torn. The inclination of the pelvis is changed. The balance of the trunk, the function of weight bearing, the posture of the patient, in fact, the whole mechanism of the spine and its functions are altered. Thus, due to the large number of structures injured in this condition the pain is felt over a wide area. The characteristic objective findings in spondylolisthesis are a hollow above the sacrum and a röntgen ray appearance which, as we have emphasized several times, is pathognomonic.

If this condition is the result of an injury, the backache appears immediately or very soon after the accident, and is continuous and disabling. In the congenital cases, it may be very mild and usually is entirely absent until the patient suffers some injury of the back, after which it is persistent. It is, therefore, logical to conclude that, whenever there is severe pain in a case of spondylolisthesis, the lesion was either caused or aggravated by an injury; that is, the presence of severe pain is proof that there was an accident.

SCIATIC SCOLIOSIS

This is a painful condition in which the body is inclined forward and to one side. The attitude of the trunk is characteristic. It is inclined sharply to one side, the iliac crest (hip) on the opposite side is prominent and there is incurvation of the lateral border of the chest and abdomen. The inclination of the trunk is usually away from the side of the lesion, though it may be to the same side.

The special feature of this peculiar posture is that it is always present and marked during standing and walking; when the patient sits down, the deformity is greatly diminished and sometimes disappears, while when the patient is prone it usually disappears entirely, especially after a little rest. In only the chronic and very severe cases does the attitude persist when the individual lies down. There are no fixed or morphological changes in the vertebræ and the deformity of the spine is entirely postural. The curvature disappears as soon as the pain is relieved. The patient cannot control or correct his posture, which changes only when he changes his position from activity to rest or vice versa. Sometimes when the patient makes a strong effort to correct his deformity and moves his body forcibly, he may push it over to the opposite side; he rarely succeeds in straightening himself completely and remaining so.

The pain may be due to a variety of conditions in the back, pelvis, buttocks and thighs. It is most frequently due to a sprain or similar derangement of one of the sacroiliac joints. Not infrequently it follows a sprain of the lumbosacral joint, strain or other injury of the lumbar joints or back muscles, gluteal myositis or sciatic neuralgia. The pain in sciatic scoliosis is usually of moderate severity except during periods of exacerbation, when it may be intense and disabling. It is usually located over a rather wide area, including the lower part of the back, buttock and thigh on the affected side. It is most intense at the site of the lesion, as, for instance, the sacroiliac or lumbosacral joint. Since the muscles of the back are in a state of constant spasm, all of the spinal motions are restricted and painful. Even motions of the lower limbs, because they bring tension on the pelvic or pelvifemoral muscles, cause pain. The pain in sciatic scoliosis is usually continuous. At times it is relieved by rest in bed; sometimes the patient finds comfort only when sitting; occasionally he may prefer to stand or walk. In this respect this condition is entirely different from the lesions previously considered.

The lesions of which sciatic scoliosis is a symptom are caused by some form of trauma or strain. The injury need not be a severe one and very often it is apparently mild. The point of importance is that any strain, whether mild or intense, may provoke an attack of sciatic scoliosis of any degree of severity.

DERANGEMENT OF THE SACROILIAC JOINTS

There can be no doubt that many people, and especially laborers, suffer from painful lesions of the sacroiliac joints. The common clinical picture seen is that of a patient who after some injury suffers immediate localized pain in one sacroiliac joint. The pain persists for weeks, months or even years and is at times disabling. There is tenderness of variable intensity limited to the affected joint. The chief symptoms are pain in the sacroiliac joint, tenderness over this area and disability. There may be other concomitant symptoms; the motions in the spine, for example, may be restricted because they cause pain in the affected joint. Flexing either lower limb at the hip, with the knee extended, by exerting traction on the pelvis through the hamstring muscles, may be painful. Lateral compression of the pelvis or downward pressure on the iliac bone on the affected side may give discomfort. The chief symptoms, however, upon which we rely for a diagnosis, are localized pain and tenderness.

Röntgen ray pictures are of very little use in this connection. In severe injuries of the pelvis, such as multiple fractures, separation at the symphysis pubis and so forth, actual dislocation of the sacroiliac joint and wide separation of the bones have been seen by most of us. In arthritis of the sacroiliac joints definite changes have frequently been recognized. But in the majority of cases of simple injury to the sacroiliac joint and the adjacent soft parts, the roentgenograms are negative.

As pain and tenderness are subjective symptoms, many and prolonged arguments have arisen, particularly in the medicolegal cases, about the reliability of these symptoms in relation to an exact diagnosis. There is no doubt but that a layman can be educated to appreciate the location of the sacroiliac joints, and may learn this well enough to complain whenever pressure is exerted upon them. But this can be true of only a small percentage of patients, and particularly of laborers, most of whom are ignorant of their anatomy and are in general of low mental caliber. On the other hand we often see cases of sacroiliac derangement in people who do not come under the ruling of the compensation law, and who have no monetary gains to expect from a prolonged illness. If in the course of several examinations, therefore, a patient always points to one sacroiliac joint as the site of his pain, the physician may be reasonably sure that some lesion exists there. If, further, the physician always elicits wincing and complaint when he presses on this area, no matter how thoroughly the patient's attention may be diverted to some other

interest, he may be positive that there is a painful lesion of the sacroiliac joint.

In the cases we are considering it is not always possible to give an exact picture of the pathology and to differentiate the various arthritic and periarthritic, ligamentous and muscle lesions, and hence it is well for the present to use the convenient and inclusive term derangement of the sacroiliac joints. We hope in the future to be able to diagnosticate more sharply than now the different pathological lesions which must at present be included, for the sake of convenience, in the group of derangements.

ARTHRITIS OF THE SPINE

In inflammations of the spine backache is practically a constant symptom. Its distribution depends on the location of the disease and its intensity varies with the severity and nature of the lesion. In destructive lesions such as tuberculosis of the spine, while pain in the back is always present and may at times be distressing, the other symptoms, such as deformity, stiffness, abscesses, general disability and so forth, constitute the important part of the clinical picture.

In the hypertrophic forms of arthritis of the spine backache varies both in its incidence and degree. In the early stages of osteoarthritis and in the final phase when the spine is entirely ankylosed, there may be very little or no backache. In the intermediate period, when the process is progressive, the pain is usually marked. At this time it is present over the entire back, but is most marked in the more movable sections of the spine, namely, the cervical and lumbar regions. The pathological process may be and often is in existence for months and years without any subjective evidence.

This class of case has been the cause of much controversy among physicians and others interested in compensation claimants, for frequently individuals with chronic osteoarthritis of the spine do not suffer any backache or disability until after some injury. The insurance carriers present the argument that the röntgen ray evidence indicates the presence of a disease which antedates the injury and, consequently, the accident is not the proximate cause of the symptoms and disability. On the other hand the patient in many instances has not suffered at all until injured. In such cases it is reasonable to assume, since the claimant has had the lesion of the spine for a long time, even years, without any disturbance or suffering, that, had the accident not occurred, he would have continued to work without any difficulty. And as a matter of experience, we have seen many of these patients incapacitated for variable periods, some even permanently, after an injury. It is not difficult to understand this circumstance as it is readily conceived that an injury may, by strain or tear of ligaments and wrenching of the vertebræ, cause an acute exacerbation and an increase of the chronic inflammatory process in the spine. On the basis of experience, therefore, easily substantiated by a consideration of the physiology of the spine and the pathology of an arthritis, we know that an injury may aggravate an arthritis of the spine and cause disability. This observation is independent of the validity of the contention that chronic osteoarthritis of the spine is probably due to a combination of some systemic or focal infection and a constitutional predisposition.

In typhoid and gonorrheal spondylitis the small joints of the vertebræ and the perivertebral soft tissues are inflamed. The pain is intense and there is marked local tenderness and stiffness of the spine. The backache usually persists for many months and long after the acute stage is past and the individual is about able to attend to a fair proportion of his routine duties. The distribution of the pain depends entirely on the extent of the invasion of the spine.

In none of these arthritic conditions is the pain in the back peculiar, characteristic or diagnostic. The pathology must be diagnosticated through the other symptoms and the objective findings.

In this connection it may not be out of place to bring up the question as to whether injury alone can cause an arthritis, that is, a traumatic nonsuppurative arthritis. We believe it can. We have seen a number of cases in which the back and spine were apparently normal prior to an injury, while following the injury the patient suffered from backache and showed unmistakable signs of an inflammation of the spine. We have a woman under our care at present who had been, as far as we could ascertain, perfectly well up to a year ago, when a weight fell on her back while she was in a stooped position. She fell to the floor. She had immediate severe pain in the back. Seen soon after the injury she appeared to us to be suffering from a contusion and strain of the back. Röntgen ray pictures of the spine were negative. She continued to suffer from pain and disability. At times she would have attacks of excruciating backache. Recently a röntgen ray examination showed that there was haziness and indistinctness of the outline of the articular processes in the lumbar region. Because of the persistence of symptoms a fusion operation was advised. At operation the articular processes were found to be soft, very spongy and evidently diseased. This patient was, therefore, suffering from a lumbar spondylitis which followed and undoubtedly resulted from the alleged injury. It cannot be denied that there may have been some constitutional predisposition, but we have no proof of any such decided and contributing factor, and must accept the injury as the proximate cause of the spondylitis.

MALIGNANT DISEASE OF THE SPINE

In malignant disease of the spine, which may be primary, as sarcoma, or metastatic, as carcinoma, backache is one of the earliest symptoms. It is usually increased during the course of the disease and at times it is so severe that it is difficult to control or to alleviate even with large doses of morphine. The pain is usually limited to the diseased area. The backache is practically continuous; it is increased by motion of the body, but rarely diminished by rest or support. The diagnosis depends not on the severity, location or type of pain, but upon the discovery of a primary focus or tumor, a history of malignancy elsewhere in the body, or clinical evidences of disease of the spine and characteristic röntgen ray findings.

CONGENITAL MALFORMATION OF THE SPINE

It occasionally happens that a patient suffering from backache is discovered to have some congenital anomaly, usually about the lumbosacral joint, such as

an unfused posterior arch of the first sacral segment, an abnormally large or bifid transverse process of the fifth lumbar vertebra, or sacralization of the fifth lumbar on one or both sides. One is inclined to attribute the backache to these congenital lesions. While in some instances such conditions as a large transverse process, may, by friction on the iliac crest, cause pain, it is undoubtedly true that in the majority of cases the congenital lesion has nothing to do with and is not the cause of the backache. We find in reviewing our experience many reasons for this conclusion: First, these malformations have always been in existence for many years, during which time the patient has had no symptoms. Secondly, in the routine examination of patients, congenital anomalous formations or malformations are seen in people who do not suffer from backache. Lastly we have the therapeutic test that in many of those patients who have been operated upon, removal of a socalled cause, such as a large transverse vertebral process, does not give relief. There are, of course, well known conditions, such as cervical ribs, which at times give neuritic symptoms and disturbances of circulation in the upper extremity, and, in isolated and rare instances, a large lumbar transverse process may be responsible for sciatic pain. When there is a well established clinical causel relation between a process of bone and the symptoms, the bony projection should be removed. However, as a general proposition, true in the large majority of cases, the coincidence of backache and a congenital anomaly does not indicate that the congenital bony malformation is responsible for the pain.

STRAIN OF THE BACK

This condition may be either acute or chronic. In both varieties are included strain of, and damage to, the muscles of the back and the intervertebral and costovertebral ligaments. The injury may be limited to a stretching of these tissues, or it may consist of a stretching of some and a tear of other fibres of the muscles and ligaments.

A strain of the back may involve only a few tissues and a small part of the back, such as the lumbosacral junction; it may be present in several areas simultaneously, or it may extend over a large section of the back, such as the musculature in the dorsal and lumbar regions. Strain of the back occurs most often in the lumbar area, because during ordinary activities, particularly those of the laboring class, the lumbar muscles and ligaments are subjected to greater and more frequent use than those in the cervical or dorsal sections.

In an acute strain the individual experiences a sudden sharp pain in the back. This persists and is aggravated by all motions of the body including respiration. There may be one or more tender areas and in an occasional case some discoloration. There is some stiffness of the back and the patient is inclined to guard against unnecessary motions of his body. A röntgenogram of the back is negative in that it shows no osseous lesion. Usually the pain lasts a short time, varying from a few hours to a few days, and disappears completely, leaving no ill effects. A strain of the back may be particularly painful, last longer than the ordinary acute attack or become chronic when it is superimposed on a preexisting chronic lesion, such as osteoarthritis of the spine, rigid posterior curvature of the spine or scoliosis.

Chronic strain of the back may result from a single acute attack, a succession of acute attacks or from a simple injury of a previously inflamed or deformed spine. The chief symptoms are persistent pain and weakness of the back, and very often localized tenderness. It is difficult to diagnose this lesion with certainty, because practically all of the symptoms are subjective and the surgeon must rely on the patient's statements. Since only the soft tissues are affected the röntgen ray offers no assistance. The diagnosis is ordinarily questioned only in compensation and other medicolegal cases. Each case must, therefore, be studied sympathetically, diagnosed individually, and it should be frankly admitted that, in denying the existence of a chronic strain of the back, we may often be in error. In our opinion the best method to pursue in arriving at an accurate opinion in cases in which there is some doubt about the patient's veracity is the one adopted by the New York State Labor Department. The claimant is placed in a hospital for a week or more for observation. There, under the constant supervision of the attending physician, the house officers and the nurses, the patient may be observed and studied when he is, so to speak, off his guard, and the true state of affairs may be discovered. Numerous telling measures may be adopted to reveal the condition and functional capacity of the patient's back and the reliability of his statements. The most dependable symptoms are persistent localized discomfort in the back on bending the body and persistent localized tenderness. When we can assure ourselves that these symptoms are present, we need have no hesitancy in asserting the existence of a chronic strain of the back.

FRACTURE OF THE RIBS

Backache and pain in the chest in cases of fractured ribs are located at the site of injury. In an ordinary uncomplicated case the pain is sharp and intense for a week or ten days after the accident. The pain is increased by motion of the body and especially by deep breathing. Rest, secured by such measures as strapping the chest and restricting the respiratory excursions, relieves the pain materially. Gradually the pain subsides and at the end of about three weeks the patient is practically well. In laborers the pain and disability are greatly prolonged. This may obtain even if the fragments are in perfect alignment. We have seen instances in which the discomfort and tenderness persisted for months, long after it was possible to demonstrate any pathological changes.

In summing up this study of backache, we would emphasize the importance of arriving at an exact diagnosis of the pathology. With due consideration to the nature of the injury or onset of the trouble, the course of the symptoms, the intensity, duration, distribution and character of the pain, the associated symptomatology and the laboratory findings, one should be able, in the vast majority of cases, to diagnosticate the lesion accurately. It should further be remembered that all symptoms of an injury in a laborer tend to be prolonged, and hence one must be patient and sympathetic in applying what sometimes appears to be unduly long treatment.

1 West Eighty-fifth Street.

Practical Therapeutics

The Efficiency of Strophanthine Sublingually Administered

JAMES L. TRACY, M.D.
Toledo, Ohio

More has been written about the pharmacology and therapeutics of the digitalis bodies on one day, only to be unwritten the next, than has been the case with any other dozen drugs all put together; with the possible exception of alcohol.

CASE.—A man of German ancestry, aged sixty-three, six feet three inches tall, weighing 291 pounds, of heavy bony and muscular frame. Until four years ago he had been a hard worker of various kinds of manual labor. An injury to his thigh, at that time, put him in bed for about three months, and after the cast was finally removed, he was only able to walk around in his home and, occasionally, on the street for short distances. During all of the four years the injured limb had been kept in bandages and for the last year the other limb had also been bandaged.

For a week before I first saw him he had been suffering from an influenzal cough. Influenza was then epidemic. For three days the cough had been very violent and dry. In coughing he had made full use of his powerful muscles. After three days profuse bronchial secretion set up, and at the time of my first visit he was expectorating two or three quarts of mucus during the twenty-four hours.

He was sitting, propped up with pillows, on his couch. He could not lie down. He was breathing little short breaths, about sixty a minute. He could speak only in short monosyllables, and then only after two or three preparatory respirations. His color was neither pale nor cyanotic, but on the contrary was of more than normal purple color. The tissues of his face and hands, as well as all over the body, felt hard to the touch, almost boardlike. At no place was there pitting on pressure. The hands could not be closed. The feet were three times their normal size. Legs were as full as the skin would hold. Large blebs formed over the ankles.

The chest walls were more than two inches thick. The abdominal walls were so distended that I thought the peritoneal cavity was full. A surgeon concurred; but his four inch trocar pressed in to full length, and more, tapped only waterlogged tissues. The penis and scrotum were not at all affected, the only edema exempt parts of the whole body. No radial pulse could be felt through the edematous parts. No heart sounds could be heard. For a short space, over the carotids, pulsation could be felt, which was regular, and about 120. Of course, no respiratory murmur could be heard, and while in the act of coughing only the very coarse râles could be heard, but, over a space about six inches in diameter, over the heart region, there was a squeaking noise which tallied with the carotid pulsations. Evidently an emphysema had formed, in the region of the heart.

He was voiding about twenty-two ounces of urine during the twenty-four hours, specific gravity .20, acid, no casts, no cells, no albumin, no bile. Hemoglobin was about 80. Bowels were moving regularly. He was very nervous and easily thrown out of mental balance. A continued noise, such as the ticking of a clock, increased the dyspnea. Strangely enough, he had appetite and was managing to eat as much as he needed.

Except for the coughing and the consequent dyspnea which made it impossible for him to lie down, either night or day, his general physical condition was not different from what it had been for many months. The very evident need of elimination, from some place, suggested that the expectoration—even if it were possible to check it—had best be let alone.

There was no possible way of finding out the heart's condition, but guided by general principles, one one hundredth grain of strophanthine dissolved in a single drop of water was placed under the tongue with a medicine dropper. Within five minutes—in all of the tumult—there was noticeable a little easing up of the fear of a not far distant death. This dose was to be repeated every two hours for a half dozen times, then given every four hours. Magnesium sulphate was to be given to produce watery passages. Strychnine one thirtieth grain every four hours was also given. Twenty-four hours afterwards, the radial pulse could be detected. The salts had acted. The strophanthine had not at all troubled the patient, so the dose was made one sixtieth grain, every four hours.

The influenza ran the usual course, and subsided. Gradually it became possible to study the heart and lungs. There were found mitral and aortic murmurs which probably had been of long duration. Eventually, though, the valve defects might have caused the dropsy. Quite likely this was the case. The heart seemed to be somewhat enlarged. The lungs were everywhere normal.

The giving of strophanthine in this dose—one sixtieth grain three or four times a day—has now been kept up for four months. The urine is much increased in amount. The patient weighs thirty-five pounds less. He sleeps in his bed all night, and in the morning his feet are free from swelling; by night, however, they are again swollen. It takes but little exertion to cause shortness of breath. The thigh injury will never be recovered from. He will probably have to take strophanthine as long as he lives. Two small uncoated tablets dissolved in a drop of water and put in the mouth make medication easy.

One may have good authority for a different opinion each day as to just how strophanthine controls the heart. In this case the cardiac centres had probably for years been at work according to biological order, trying to adjust the dysfunctioning heart valves, to the best interests of the body as a whole. Naturally the functioning of biology is always towards the defeat of biology. The anasarcous condition was nearing the biological finish. Strophanthine

under the tongue came in direct contact with efferent nerve endings. It produced nerve impulse and was carried to sympathetic cardiac centres. The strophanthinized centre thus got in deeper than was the biological inhibition centre. The accelerator impulse, from the strophanthine dictated centre, again vitalized and nourished the fibre of the heart muscle. The metabolic makeup of that muscle fibre nourishment is beyond laboratory demonstration. Evidently in this case a strophanthine glucoside did not bathe the fibre. The fibre action was too prompt.

West Woodruff Avenue.

A New, Nontoxic Analgesic and Antirheumatic Drug of Definite Value in Vascular Hypertension

EMANUEL W. LIPSCHUTZ, M.D.

Brooklyn

(*Concluded from page 278*)

Because of the limitations of space, the entire group of thirty-six case histories will not be cited. The following six protocols have been selected as typically representing the therapeutic action of the drug.

Case I.—B. F., female, married, housewife, aged forty-two, had an attack of acute tonsillitis, lasting four days. For three days following the throat infection, she felt pretty well; but, on the morning of the fourth, she experienced severe painful stiffness in both thighs, which was aggravated when she attempted to straighten out her legs. There was also stiffness in both wrists, and attempts to flex or extend the hands caused severe pain. At this time, the patient took atophan of her own accord; but, in spite of this medication, her condition became worse. The wrists showed red, inflammatory areas along the extensor tendons; the right knee and ankle were extremely painful and tender over the tendon sheaths, showing sensitive red patches over these areas; and stiffness and pain in the muscles of the thighs persisted.

At this stage, the patient sought medical advice. When I saw her on April 8, 1926, she was prostrated and confined to bed. The temperature was 101° F. I ordered a milk diet and an analgesic mixture. Blood culture and uric acid estimation were found negative (Dr. Bleivass).

Five days later, the patient remained unimproved. In fact, the left knee and ankle joints were now involved and showed red patches over their tendon sheaths, and there was a large red patch over the gluteal region. The diagnosis was acute rheumatic infection with polytenosynovitis, probably secondary to acute septic tonsillitis.

At this stage, expuralgin was prescribed in doses of ten grains (0.65 gm.) every three hours. On April 14th, after the administration of only five doses, there was great relief in the thigh muscles and ankles and the patient was able to leave her bed for a period of about four hours. However, getting up appeared to aggravate her condition; for she had a return of symptoms, although in a milder form. Expuralgin was then administered continuously up to April 24th, and the patient made an uneventful recovery. The red, inflammatory patches showed gradual retrogression with the pain and tenderness in the joints and tendons. It is interesting to note that during the administration of the drug, diuresis was increased to a considerable degree. The patient at no time complained of gastric disturbances.

Case II.—M. G., male, aged thirty-nine, was taken ill in December, 1925, with a subacute rheumatic infection involving both angle joints and the right shoulder. He was confined to bed for a period of three weeks, after which he began to suffer from a constant pain in both arms, extending about half way down the forearms. Physical examination disclosed nothing of importance except a moderate degree of oral sepsis. The pain, as described by the patient, corresponded to the distribution of the musculospiral, radial, and ulnar nerves. The diagnosis was neuritis, probably resulting from focal infection in the mouth.

Dental supervision was advised. Expuralgin was administered in a dose of eight grains (0.52 gm.) three times a day. After one week of this medication the patient reported complete relief from pain. He was able to flex and extend his forearms with perfect freedom. Four weeks after the discontinuance of medication, he was still free from pain and disability.

Case III.—B. W., female, married, housewife, aged thirty, complained of pain, drawing and lancinating in character, along the course of the left musculospiral nerve, and also of a vague drawing pain in the muscles of the lower part of the back on the right side. These symptoms lasted for two weeks and did not respond favorably to hot applications and other household remedies.

Physical examination revealed nothing of importance. A diagnosis of neuritis was made.

Expuralgin was given in doses of ten grains (0.65 gm.) every three hours. There was complete relief of all symptoms after six doses. Eight days after the discontinuance of medication the patient was still free from symptoms.

Case IV.—H. F., female, married, housewife, aged fifty-two, had an acute coryza lasting several days. This was followed by pain in the region of both antra. Several days later the pain disappeared from the right antrum and remained localized in the left. There was a severe, shooting, paroxysmal pain on the entire left side of the face and scalp. The attacks came at intervals of about one half hour. The patient took aspirin in doses of five to ten grains (0.324-0.65 gm.), but was not relieved. She came

to me on the third day of her illness. Expuralgin was given in doses of five grains (0.32 gm.) every three hours for a period of two days, but there was no appreciable relief at first. Then the dose was increased to eight grains (0.52 gm.) every three hours, and there was complete relief of the symptoms within two days.

Case V.—D. L., female, married, housewife, aged fifty-six, came for examination on April 24, 1926, complaining of pain in both knee joints and the sacral region. The pain was constant and more pronounced in cold, rainy weather. Cholecystectomy had been performed in July, 1925, and all the teeth extracted in September of the same year. The present illness dated back to September, 1925. Since that time the patient had been taking various therapeutic agents, including coal tar products, endocrine preparations, and remedies directed toward the alimentary tract; but these measures gave very little relief. Iodides and salicylates were administered intravenously; but, while this treatment afforded relief, it had to be abandoned because it gave rise to severe diarrhea.

On April 24th, because of a return of symptoms, expuralgin medication was begun, ten grains (0.65 gm.) three times a day. On May 4th the patient reported that she had felt well for the last ten days under this medication. From that time on five grain (0.324 gm.) doses three times a day were advised. On May 21st the patient stated that she was free from pain. While it is impossible to predict how long the relief from symptoms will last in this case, it is evident that the drug brought about definite abatement of the symptoms without causing any appreciable ill effects; therefore, in case of recurrence of symptoms, a return to expuralgin medication would be warranted.

Case VI.—M. T., female, married, housewife, aged forty-seven, complained of inability to raise her right arm because of severe pain in the shoulder joint or to flex or extend her forearm because of excruciating pain in this region. The illness began four days previously, at which time she felt pain over the olecranon process. At that time attempts at flexion or extension of the forearm met with only slight difficulty. The condition became progressively worse.

On examination, the right arm was in a position midway between flexion and extension and held closely to the side of the body. Because of excruciating pain, the patient was unable to abduct her forearm. There was marked tenderness in the regions of the right shoulder and elbow joints and along the course of the musculospiral nerve. Otherwise, physical examination was negative. The diagnosis was acute neuritis and probably myositis, rheumatic in nature. Expuralgin was given in doses of ten grains (0.65 gm.) every three hours until the acute pain subsided, then every four hours. On the fourth day the patient was so much better that she was able to comb her hair without assistance. Altogether, the period of medication lasted eight days, at the close of which period the patient was entirely free from symptoms. She has remained so to date.

CONCLUSIONS

1. Expuralgin (potassium magnesium acetyl citrate) is not toxic to rabbits when administered intramuscularly in three and a half times the therapeutic dose by mouth.

2. Careful observations showed no depressant action of the drug on human subjects, and there was no gastric disturbances following its use.

3. Expuralgin induces a definite artificial leucocytosis. This factor probably explains much of the value of the drug in local inflammatory conditions.

4. The drug promotes the elimination of uric acid and increases diuresis.

5. Expuralgin has definite analgesic effects in painful affections.

6. In vascular hypertension, expuralgin produces pronounced and prolonged reduction of the blood pressure. When the hypertension is due to arteriosclerosis, however, the effects are unfavorable.

7. Clinical cases are cited to illustrate the therapeutic efficacy in rheumatic, arthritic, neuritic, and other painful conditions.

8. Expuralgin is indicated in the treatment of high blood pressure, articular rheumatism, arthritis deformans, rheumatoid affections, rheumatic myositis, polytenosynovitis, neuritis, and migraine. It is contraindicated in arteriosclerosis.

9. The dose of expuralgin used in the cases here reported was ten grains every three hours until pain abated, then ten grains three times a day until lasting relief was obtained.

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194 South Ninth Street.

Simplified Method of Filling Pulmonary Cavities.—Arnold Josefson (*Schweizerische medizinische Wochenschrift,* March 20, 1926) proposes the use of a hollow spatula, through which lipiodol (iodized oil) may be injected without the aid of direct ocular laryngeal control. If the patient is placed in a Trendelenburg position immediately after the injection, the oil can be made to flow toward the upper lobe, and by changing the position into a lateral one the oil may be directed in any desired direction. Almost the entire amount of the oil may occasionally be caused to lie in the upper portions of the lung, and even near the surface of the lung.

In order that the injection should reach the lung it is absolutely necessary that the rima glottidis should be wide open on marked traction of the tongue. The technic of the injection is as follows: The pharynx and especially the dorsum of the tongue must be well cocainized. The tongue is then drawn outward with force. The hollow spatula is then applied to the back of the tongue and the patient is instructed to breathe deeply. With every inspiration the lipiodol is injected. The patient is then placed in any desired position and immediately röntgenographed. As a rule, twenty to thirty c. c. of the oil is sufficient. With good anesthesia there is rarely an irritative cough.

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The Endocrine Glands as Dominant Factors in the Therapeutic Action of Light and Heat*

CHARLES E. de M. SAJOUS, M.D., Sc.D., LL.D.

Philadelphia

Although the physiological action of heat in any of its therapeutic forms cannot be interpreted without taking the functions of the ductless glands into account, no set of organs is perhaps more neglected than they are in the study of this important question. The cause of this neglect is not difficult to discern: it is the perpetuation of obscurity concerning the functions of these organs by textbooks of physiology and books on endocrinology, which though replete with organotherapeutic advice, take no pains whatever to explain the mode of action of the organic products used, thus persistently keeping up the empirical methods which this society has always opposed. The excuse that this neglect of the pharmacodynamic side of endocrinotherapy is inevitable because the physiological rôle of the endocrine organs is unknown is invalid, for it is due only to the fact that the writers of such material have merely followed the physiological bell-wether which has to this day led them to a sterile *terra incognita*. The fact that despite the vast amount of painstaking and extremely valuable labor devoted to the subject by physiologists ever since the middle of the last century (when the term internal secretions was introduced) the true rôle of these agents in the body is still unknown to them, clearly suggests that something wrong has obscured their vision.

I have long urged the reason for this, and submitted in 1903 deductions concerning the functions of the various endocrine organs which differed totally from those from time to time proposed, then sidetracked, by physiologists. This was due to the fact that our methods of research were dissimilar. While physiologists depended mainly on their own branch for data, my labors covered, besides physiology, the other branches of medicine, both clinical and auxiliary —a method now termed "synthesis of sciences." No conclusion was reached until all these branches had contributed their findings, and any conclusion postulated represented the apex of a pyramid composed of all this aggregate knowledge.

*Read before the American Therapeutic Society, Philadelphia, June 11, 1926.

Time has sustained the value of this method. While the physiologists have revealed not a single fundamental function for any endocrine organ, the principles of the functions I laid down in 1903 and 1907 in the first book ever published on the internal secretions, have all held their own. Even the pituitary body has been forced by events to lapse into the line of thought I pointed out over twenty years ago. What did the lesions practised by Camus and Roussy in 1913 and many others since, above and behind the pituitary body, producing effects ascribed to a supposititious internal secretion of that organ, do but prove that my views of 1907 concerning its functions were the ones that were sound? All the lesions were in basal nuclear areas and nerve paths that I had described.

Time and the scientific loyalty of many investigators is beginning, however, to prove once more the strength of patience or forbearance. The question treated in this paper bears mainly upon tissue oxidation and thermogenesis as dominant functions of the adrenals (1). One of our distinguished physiologists, Dr. F. S. Hammett, of the Wistar Institute, stated at the meeting of the Association for the Study of the Internal Secretions last year, that he had devoted two years to the study of the functions of the adrenals, and that he had reached the conclusion that I had not erred when I attributed to the adrenals so dominating a position in the body. Dr. George Crile also declared at the Congress of Anesthetists last year, that the labors of physiologists and of investigators in other lines had only served, in recent years, to confirm my views and that even physiologists were beginning to admit it. I mention these various facts only to show you that I am standing on firm ground on the question in point.

What I am about to tell you, however, has a far greater reach than the important therapeutic method which is described in the heading of this paper, for it entails the solution of a problem which in importance is as great as the discovery of the circulation of the blood which we owe to Harvey. An editorial writer in the *Journal of the American Medical*

Association rightly declared in 1919 that "an answer to the question as to how the all important oxidations in the body are brought about is almost as obscure as it was a hundred years ago." Indeed, even in the 1924 edition of his textbook of physiology (page 392), Howell states that "the respiratory history of oxygen ceases after this element reaches the tissues." In truth, little progress has been made in this direction beyond the fact that oxidations occur in the tissue cells ever since the discovery of oxygen by Lavoisier in 1780.

The consequences of this state of things—distressing beyond expression—are well summarized in Professor Halliburton's statement of 1921 that "our knowledge of tissue respiration is so scant that we can say but little of its pathological bearing." Deplorable also in this connection is the fact that even the most elementary manifestations of disease met constantly in practice have remained unexplained, the ubiquitous process of fever for instance. "Even if we grant," wrote Lazarus Barlow over twenty years ago, "that fever is beneficial, we are completely ignorant of the manner in which it acts." The same ignorance prevails to this day. A multitude of valuable data but no solution. With the dangers of hyperthermia, hemolysis and autolysis before him the family doctor suffers the tortures of the damned, lest by trying to save through fever, he kill by fostering it!

The profession at large and laboratory men in particular should realize that medicine is not suffering today for lack of data but from the perpetuation of obscurity through neglect of what is available. As the late Sir James Mackenzie wrote but five years ago: "The conception of medical research which is dominant today is so immature and imperfect that it renders fruitless much of the research work. Indeed, so imperfect is the conception that fields essential to medical progress are not recognized." This applies particularly in the present connection, for if the physiologists and pathologists had left their avowedly sterile paths to consider the newer aspect of pulmonary and tissue respiration I opened in 1903 with the adrenals as main factors, tremendous advances would have been made in all directions during the last two decades, with a correspondingly great saving of human lives as the result.

In its relations to our subject, i. e., the curative properties of heat and light, the problem of tissue respiration is paramount, for both are intimately bound up with the process of fever, an exacerbation of this function as I have described it. In other words, these therapeutic measures, however applied, merely enhance Nature's own defensive activities by producing an artificial local or diffuse febrile process. What is the nature of this process?

In the brief time at my disposal I can only submit the deductions reached, referring you for the evidence to previous writings.[1]

Fever is primarily due to excessive activity of the adrenals, as regards the supply of agents which carry on heat production in the tissues. These agents are three in number: the medullary secretion which I termed in 1907 *adrenoxin,* and the products of the adrenal cortex *lecithin* a phospholipoid, and *cholesterol* a monatomic alcohol. The red blood corpuscles, in which these three bodies are also found besides their hemoglobin, appropriate them on passing through the adrenals, then take up oxygen on passing through the lungs, thus converting their adrenoxin into adrenoxidase, i. e., their hemoglobin in oxyhemoglobin. Thus charged the red corpuscles are transported by the bloodstream to the tissues, in the pericellular spaces of which they discharge a part of their contents in the form of blood platelets. In the tissue cells they meet two main substances: enzymes and food products of various kinds.

Taking into account only the main participants in the intracellular vital process the latter is as follows: The adrenoxidase, which is the oxygen carrier, reacting with the phosphorus of the lecithin, liberates heat energy. As enzymes are active up to a certain limit, according to the temperature to which they are subjected, the cell enzymes, trypsin, lipase, etc., then split the proteins, fats, sugars, etc., also present in the cell. We do not have "tissue oxidation" as is now taught, but the liberation of heat to promote activity of the enzymes which sustains the whole process of metabolism, both its anabolic and catabolic phases.

Yet, how is this process activated or held in check to insure a just mean of heat liberation, that represented by the normal temperature? The thyroid secretion is the activator while the cholesterol, previously referred to, is the inhibitor.

While the action of cholesterol is given as unknown in textbooks and regarded as an antitoxin by some, considerable evidence, for which I must refer you to my recently published article in *Endocrinology,* is available to show that it inhibits the thermogenic activity of lecithin which it accompanies in all tissues, even in the red corpuscles. Hence its recognized value in secondary anemias, cancer and other disorders in which hemolysis occurs. Cholesterol is the brake, so to say, of the thermogenic action of lecithin.

As to the process through which the thyroid secretion produces the reverse effect, that is to say, acts as a lecithin activator, Kendall, referring to his thyroxin, states that the manner in which it acts in the tissues is unknown; but he is swerved away from the true explanation by his conclusion that thyroxin which, he says, "is active in nearly all the cells of the body," is a catalytic agent. As I held twenty years ago, the thyroid hormone is bound up with an oxidizing enzyme (my adrenoxidase) which is itself a catalytic agent. Hence the term I then applied to the thyroid secretion "thyroiodase." But the physiological rôle of this hormone is not that of catalysis, which, in fact, plays the rôle of activator in many other enzymic functions. As Reid Hunt said in this connection, "the mode of action of iodine in thyroid is unknown."

In truth, the action of the thyroid hormone or principle could not be worked out without knowing the rôle of lecithin in the tissues, another admittedly unknown feature. In 1903 and in 1907, I pointed out that it was by enhancing the sensitiveness of the phosphorus in all tissues that the iodine of the thyroid increased metabolism. Four years ago I found that the main cellular substance thus acted upon was the phospholipoid lecithin which it activates by sensitizing, or increasing the lability of, the phosphorus which this lipoid contains.

[1]See either of the ten editions of my work on the "Internal Secretions and the Principles of Medicine" 1903 to 1922, and particularly my article in *Endocrinology,* November-December, 1925, pages 441 to 455.

Hence the fact that in exophthalmic goitre or hyperthyroidism the metabolic rate, the pulse, the appetite and emaciation progress as concomitant symptoms. The iodine in organic combination, containing the catalytic agent of adrenal origin, being produced in excess, the lecithin, the heat liberating agent, is oxidized in proportion.

The tissue enzymes being rendered correspondingly active, the fats, proteins, etc., are consumed in proportion.

The beneficial effects of heat or light therapy in any of its forms, including heliotherapy and to a certain extent the röntgen rays, are due to their influence upon this physiological process. They fulfill the rôle carried out by the reaction between the adrenoxin —oxygen and the lecithin, which serves to liberate heat energy. This heat energy, by raising the proteolytic activity of enzymes also present in the tissue cells, enables them to break down or digest pathogenic germs, their toxins or toxic waste products of metabolism and thus to antagonize the diseases any of them may produce.

Heat or light therapy thus provokes an artificial local fever, emulating thereby Nature's own way of counteracting infection. Excessive fever (hyperpyrexia) as represented by a body temperature exceeding 105° F. is harmful, however, by endowing the proteolytic cellular enzymes (trypsin) with excessive digestive activity. The blood cells and even the tissues may thus be themselves digested (hemolysis or autolysis), causing either profound anemia, valvular diseases of the heart, endocarditis, arthritis, or other disorders and even death. The therapeutic use of heat or light radiation are similarly beneficial up to a certain limit but harmful when carried beyond it.

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Status Lymphaticus*

R. S. LEADINGHAM, M.D.
Emory University, Ga.

The progress of tissue growth and development is guided from the undifferentiated layers of the embryo toward completion of design and correlated function, not only by the power of heredity and the influences of environment, but by certain stimulating, restraining, and correlating forces within the developing structures themselves. Of these, the specialized functions of such tissues as the central nervous system, the ductless glands, and the reticuloendothelial system; the distribution of nutriment; and the mechanical effect of tissue tension, represent some of the influences that combine to maintain normalcy in tissue growth throughout the life of the individual. These factors probably constitute a large part of the mechanism that governs the balance of cellular capacity for work and reproduction, and they have also been called upon to explain the presence of anatomical anomalies and the nature of neoplastic growths.

Of late years considerable has been added to our knowledge concerning these factors, but their interrelationship and the manner in which the individual emphasis varies according to the stage of development and needs of the body, offer a wide field for investigation.

It is known, for example, that the cellular elements of the blood are formed in the embryo by structures that later relinquish this function to a comparatively small portion of the bone marrow and lymphoid tissue. These centres are capable throughout life of varying their output, supplying in such accidents as hemorrhage and infection the increase required. When the need is met and the organism's well being restored, they return to a production just sufficient to maintain the *status quo.*

In the blood dyscrasias, as polycythemia and the leucemias, there is an uncoordinated effort on the part of the hematopoietic system, caused by either an undue stimulation or release of inhibitory influences, that results in vicarious activity which seems to include all the potentialities of the blood forming tissues. This activity is characterized not only by an increase in the number of cells in the blood stream, but also by the presence of more or less undifferentiated types of varying degrees of immaturity. Other tissues of the body are capable of behaving in like manner, as malignant new growths, which, without prompt measures for removal, will proceed with their proliferation and metastasis until the organism is destroyed.

In both of these instances there is represented a misguided or undirected effort on the part of an individual cellular element which calls upon the host for its support at the expense of other tissue's well being. Both suggest not only a potential trend toward bolshevism, but a breaking down of a mechanism that normally holds it in restraint.

In childhood, the lymphoid tissues form a barrier to many infections. The mesenteric lymph nodes especially seem to have an important part in protecting the child from harmful invasions until a degree of immunity is established. Then, as the years pass, these structures occupy relatively less prominent places, anatomically, at least, and in the adult they are commonly smaller than they were in the child.

Sometimes the development of this tissue persists or increases out of all proportion to its usefulness. Such an increase may be represented by local manifestations as hypertrophied tonsils and excessively developed adenoid tissue in the mesopharynx; or it may be a part of a symptom complex in which there is persistence and enlargement of the thymus gland.

*Read before the Fulton County Medical Society, Atlanta, Georgia, February, 1926.

This latter state is known clinically as status lymphaticus, and individuals so afflicted commonly show, with evidences of lymphatic hyperplasia, indications of abnormalities and feebleness of other tissue development that may persist through life. The process differs from neoplastic development in that the cellular elements show no inclination toward autonomous

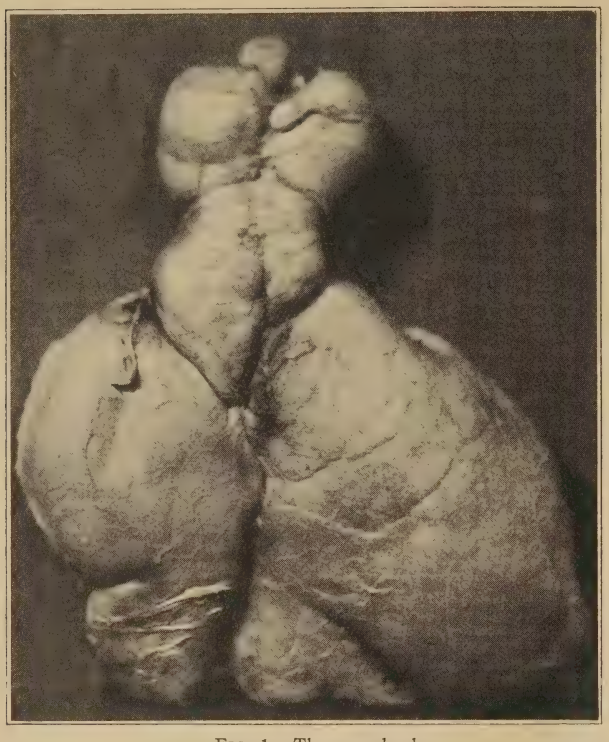

Fig. 1.—Thymus gland.

growth. It is unlike that found in blood dyscrasias, in that there is no evidence of the tissue's activity in the blood stream other than sometimes a relative lymphocytosis. Like both of these conditions, however, it represents a development of a specialized tissue at the expense of the whole.

PHYSIOLOGY OF THYMUS GLAND

The significance of the enlarged thymus in status lymphaticus could be more profitably discussed if we knew more of its normal function. Its probable relationship to the thyroid, the anterior lobe of the pituitary, the medulla of the adrenals, and the sex glands, has been the subject of much interesting speculation. The fact that the experimental laboratory has failed thus far to isolate a thymic hormone is, of course, no proof that it does not exist. Butchers are said to have noted that the thymus in the castrated bullock is nearly twice the size of the gland in a bull. Basch, Klose, Vogt, and Matti conducted experiments that were for a long time accepted as proof that removal of the gland interfered with bony development. Park and McClure (1), however, demonstrated that the normal laboratory animals, kept in the same quarters and on the same diet, showed like results of their confinement.

The cortical portion of the normal gland is composed of a reticulum in which are held small round cells, the nature of which were for a time disputed, but are now generally recognized as small lymphocytes. After childhood these are lost and the gland decreases in size until its remains are buried in a mass of fat that develops in its interstitial tissue.

In status lymphaticus, the lymphoid hyperplasia in the cortex of the thymus is comparable to that found in other lymph adenomatous structures. The normal appearance is altered by an increase in the number and size of the germinal follicles, and by the lymphocytes filling the sinuses. Attention has been called by some writers to necrosis of the centres of the lymph follicles, hypoplasia of the cardiovascular system and changes in the thyroid and adrenals; but these changes have not been universally observed.

CLINICAL PICTURE OF STATUS LYMPHATICUS

The clinical picture in children suffering from status lymphaticus suggests either the angelic child of delicate coloring and mold, or the mentally sluggish and coarser featured individual, both of fine skin and shapely limbs. They are especially susceptible to intercurrent infections and often fall victims to tuberculosis. Enlarged tonsils and adenoid vegeta-

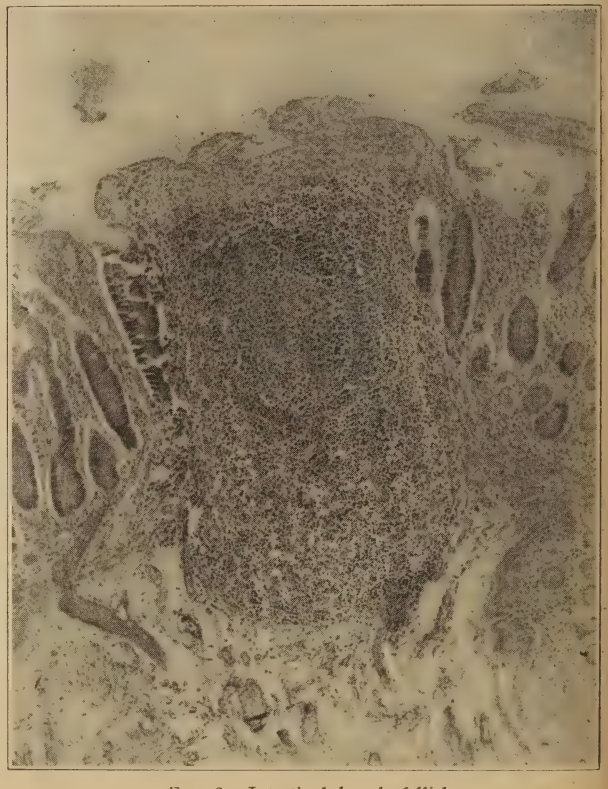

Fig. 2.—Intestinal lymph follicle

tion in the nasopharynx are common and an apparent increase in the number of follicles at the base of the tongue has also been noted. Recurrent asthmatic attacks and laryngeal spasms are classical symptoms of the disorder.

In adults, the male is inclined to show skin of a delicate texture, a well rounded and proportioned body, underdevelopment of the genitalia, and scanty hair on face and body. In the female there is likewise an unusual delicate texture of the skin, an accentuation of the graceful outline of the body, and scanty growth of axillary hair. They are noted to be subject to various forms of nervous exhaustion and even grave mental disease. Emerson

(2), from among one thousand patients suffering from the effects of attempted suicide, drug, and alcoholic addiction, found 220, or twenty-two per cent., that he thought showed most or all of the evidences of status lymphaticus. Bartels and Miloslavich (3) found that 80.5 per cent. of 232 cases of suicide showed, at autopsy, signs of this stigma.

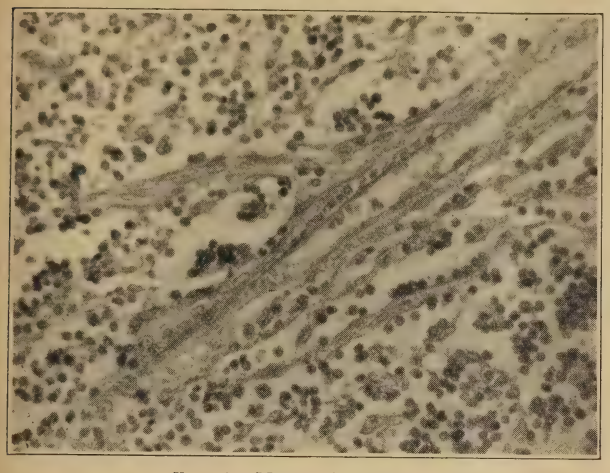

FIG. 3.—Mesenteric lymph node

The tragedy of status lymphaticus, however, is not in these rather ill defined abnormalities, but in the sudden death that frequently overtakes its victims. A short time ago I was called to visit a home where such a tragedy had occurred. In this instance the victim was a five year old boy, who had, from his birth, been subject to attacks of difficult breathing and laryngeal spasm. He had also never learned to talk. The evening before, he complained of trouble in his throat, and his mother applied some external medication and tied a piece of flannel about his neck. At one o'clock in the morning he rose up in bed, choking, and awoke his mother. She caught him up, put him in a chair, and ran to the medicine cabinet for a dose of ipecac, which had, in previous attacks, always brought relief. Returning, she raised the spoon to his lips, and as she did so he gasped and fell dead in her arms.

Autopsy revealed a well developed child, showing no abnormality except a thymus weighing thirty-two grams, greatly enlarged mesenteric glands, and prominent follicles in the gut. Microscopical examination showed evidence of increased activity in all the lymphoid tissues, lymph glands, spleen, follicles of the gut, and cortex of the thymus. There seemed to be, besides an increased number of germinal centres, a decided proliferation of the reticular cells in the surrounding stroma.

As in this case, death may occur without any apparent cause, or may follow the most trivial injury. It has taken place in the operating room as an unfortunate incident in the course of a general anesthetic.

CAUSE OF DEATH

It has been variously suggested that such deaths may be due to abnormal pressure of the enlarged thymus, a toxic agent secreted by the gland, or to a state of anaphylaxis in which the whole lymph adenomatous tissue is involved. Those favoring the toxic theory believe that the toxine is responsible for the asthmatic attacks, and is also capable of causing heart failure. So far, none of these theories have been proven experimentally.

CONCLUSIONS

In conclusion, we must note, that, although for a long time status lymphaticus has been recognized as

FIG. 4.—Spleen

a clinical entity, and, in spite of the interesting experimental work that has been, and is being done, we know nothing of its cause. We look to the laboratory for further information concerning the interrelationship of lymphoid and thymic development with the secretions of the ductless glands; and the importance of increasing our knowledge of a condition fraught with such grave potentialities should stimulate us, not only to make a close clinical investigation of suspected cases, but to secure postmortem examinations in all cases of sudden death.

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Nondiabetic Glycosuria.—H. J. John says (*Endocrinology,* March-April, 1926, vol. 10, page 115) a diagnosis of diabetes should never be based on the presence of glycosuria alone. A glucose tolerance test may be made by taking a sample of fasting blood, then giving to the patient an icecold solution of one hundred grams of glucose dissolved in three hundred cubic centimetres of water flavored with the juice of a lemon. Samples of blood and urine taken at periods of half an hour, one hour, and two, three, and four hours, if the patient is diabetic, will show a slow and prolonged rise of the blood sugar curve, with an equally prolonged fall, while in a nondiabetic the curve will rise quickly with an abrupt fall. Examples are given of cases of diabetes of renal origin correctly diagnosed by this means. Observation shows nondiabetic glycosuria to be an innocent anomaly requiring no restriction of diet or other treatment.

On Endocrine Diseases*

JOHN WILLIAM SHUMAN, M.D., F.A.C.P.
Los Angeles
Associate Professor of Medicine, College of Medical Evangelists

Much medical fiction has been written about dreams and endocrines. Some wit has called the ductless glands—"the glands with an eternal secretion." A few facts concerning these glands follow.

Endocrine means internal secretion. The glands which chiefly furnish this secretion are the pituitary, pineal, thyroids and adrenals. These are the main links in the socalled endocrine chain. Others which play a part are the thymus, pancreas, spleen and gonads.

The pituitary (third, or small brain), has an anterior, middle and posterior part. By some observers (chiefly Sajous) it is said to dominate the chromaffin system. Cysts and new growths are its frequent diseases. This gland's secretion has much to do with body growth. Overgrowth, giantism, and acromegaly, are due to overactivity of the gland; the first two take place before, the third after, ossification of the epiphyses. The pineal gland has some influence on growth but is not so well understood.

THYROIDS

Goitre is popularly classified as follows:

1. Colloid:—This enlargement of the gland is seen in early adolescence, most frequently in the female, has a soft velvety feel, is symmetrically enlarged, and should never be operated upon. Iodine is helpful in its management.

2. Adenomatous:—Two types exist, a, the simple adenomatous, and b, the toxic adenomatous. With this form of goitre there is little or no exophthalmos and no body tremor, or loss of weight, and the basal metabolic rate is not greatly altered. Usually the right lobe is enlarged. Parts of the gland may contain single or multiple adenomas and often escape detection. The toxic type seriously damages the heart. The treatment is medical for type a, and surgical and medical for type b.

3. Exophthalmic (Graves's, Basedow's or Perry's disease): This type is diagnosed by exophthalmos, tremor, and tachycardia. The gland may not be perceptible, but usually is enlarged. It may be substernal, even retrotracheal. Loss of weight, insomnia, gastric crises, diarrhea, and psychoses may result from this disease. Exophthalmic goitre is not due simply to excess of thyroid secretion. The surgeon may remove enough of the gland to cause myxedema and the patient still show symptoms of exophthalmic goitre. The basal metabolic rate is increased. Treatment is surgical and medical.

Other diseases, such as neoplasm, both malignant and benign, acute inflammation, abscess and cyst, are a few of the many which may attack the thyroids. Aberrant thyroid is a possibility.

Cretinism is of several types, early and late. It results from too little thyroxin, the thyroid's active principle. It may be due to congenital absence of the gland, or disease causing it to atrophy. The treatment is the administration of thyroid extract very early and a sufficient quantity given over a long period.

Myxedema is the same thing only it takes place later in life. Examples may be seen following some operations upon the thyroid for goitre. It does not happen now so frequently as formerly, because few surgeons do total thyroidectomies.

Tetany has developed following the accidental removal of the parathyroids. It is recognized by intermittent tonic muscular spasms of the hands and arms and increased excitability of the peripheral nerves. The treatment is calcium lactate, U. S. P.

Focal infection plays an important rôle in causing disturbances of the endocrine glands. It should always be diligently sought for and when found removed, if possible. Habits of thought and living (faulty in nature) should be studied and rectified.

ADRENALS

These furnish the body with a substance called adrenalin. Addison's disease is one in which there is hypoadrenalism—a disease which is evidenced by a peculiar bronzing of the skin, loss of strength, low blood pressure, diarrhea, and slight anemia. It is fatal. The cause is destruction of the adrenal tissue. Tubercle bacillus can do this, also cystic degeneration, neoplasm and injury. There are mild grades of hypoadrenalism, for example—seen during convalescence following acute fevers, during long continued toxemias, and mental and physical overwork.

GONADS

The terms hypogonadism and hypergonadism refer to ovarian and testicular internal secretory functions. Some dispute that these chromaffin organs have an internal secretion. That they have a big rôle to play in metabolism is clearly demonstrated by the castrated animal (the eunuch or agonad). The ovariectomized or testiculized female or male takes on the opposite sex characteristics. Especially is this true if castration is done before the formative and sex functioning period of life is over. If afterwards, these changes are not so marked.

Recently there came to my service an exsoldier who, when a child, lost one testicle from injury. The other compensated until a gunshot wound during the late war caused the loss of the remaining gland. Soon his voice became high pitched, his hair thin and soft, and fat deposits of breast and hips gave him the appearance of a female. He was twenty-four when he suffered his last accident. Ram's testicular tissue injected subcutaneously once every ten days or two weeks, caused a loss of thirty-five pounds, his voice and features became more masculine and he expressed himself, "I feel much improved." Such treatment is not lasting in effect.

Today surgeons are conservative when doing pelvic surgery. They leave functioning parts, if not all of the ovaries, for the reason that an ovariectomized woman takes on masculine changes. This is notice-

*The last of six clinics for Senior Students of College of Medical Evangelists, held April 29, 1926, at the Los Angeles General Hospital.

able in some women during the menopause, due to atrophy of these organs Often they improve when given sheep's ovary and thyroid gland extracts.

A definite relationship exists between the thyroids and ovaries. Three times in a woman's life is her thyroid liable to change—at puberty, during gestation, and in the climacteric period. Frequently during menstruation the breasts and thyroids are more full and sensitive.

Uterine disease, for example, fibroidosis, fibroid and other tumors, frequently are associated with thyroid dysfunction. The converse is also true. With thyroid disease, uterine disturbances such as amenorrhea, and dysmenorrhea, are often the chief complaints which bring the patient to the physician.

The endocrine glands are interrelated. Thyroid disease may involve the thymus. Many problems, e. g., status lymphaticus, menopause, puberty, obesity, pathological sleepiness, high blood pressure, low blood pressure and many other conditions still remain unsolved. Do not forget that the pancreas is one of the organs of internal secretion.

Illustrative Case by Intern Dr. G. W. Harmon: No. 246521, a Mexican, male, single, aged thirty-two, complained of "nervousness for three years, worse the last two months; weakness, and irritability." He had lost forty pounds during the last two years; had difficulty in swallowing, diarrhea and borborgymus; all coming "in attacks." He had been worse the last two months since the death of his father. (Dr. Shuman—"Note the effect grief has in the production of attacks of thyroid toxicity."

Physical examination.—Undernourished and over alert; exophthalmos without marked Von Graefe's, Stellwag's and Moebius's signs; tonsils diseased; a bilateral enlargement of the thyroid, which was firm and elastic; a systolic murmur heard over the gland; there was expansile pulsation of the gland; tachycardia (105); blood pressure 135-75; a fine tremor of the outstretched fingers; cutaneous bronzing and reflexes lively.

Laboratory findings:—Blood, white blood cells 4,650; lymphocytes 47 per cent.; urine, specific gravity 1.018 and a trace of albumin. Basal metabolic rate, plus 48 per cent.

Diagnosis, exophthalmic goitre; treatment, medical, later surgical.

2007 Wilshire Boulevard.

Studies with Thyrotoxic Blood and Adrenalin

Presence of a Toxic Element

ROBERT L. PITFIELD, M.D.
Germantown, Philadelphia

In a previous paper (1) I described some experiments in which the injection of one cubic centimetre of serum from a thyrotoxic case into a white rabbit followed by instillations of one to one thousand solution of adrenalin induced mydriasis. In the five cases of toxic thyroid all reacted while in the controls reported in that paper there was no reaction. I have found that it is essential to use white (female) rabbits in the experiments and pregnant females seem to be more sensitive than others. In one experiment five mgs. of thyrotoxin injected into a rabbit with instillations of adrenalin beginning immediately afterwards no mydriasis was induced, the animal died within twenty-four hours. Not only was there no mydriasis, but the eyes became sunken, the animal was distressed, panted heavily and rapidly and succumbed to the poisonous effects of the thyrotoxin in this huge dose.

A portion of a very toxic adenomata, recently removed from a woman, whose history is detailed under S. B. later in this paper, was washed clear of blood then finely macerated and the juice of the tissue squeezed out in sterile gauze. Two c. c. of this fluid was injected into a rabbit and adrenalin instilled intensively every four minutes. Total mydriasis was produced in forty minutes by the instillation of twenty drops of adrenalin solution.

One c. c. of this thyroid tissue extract was mixed with .25 c. c. of adrenalin and injected into another rabbit, after the lapse of eighty minutes there was no sign of mydriasis.

As controls other sera from sick persons was employed, one c. c. of serum from a young man with acute syphilis produced mydriasis with the addition of adrenalin instilled into the rabbit's eye, the same amount of serum from a woman suffering from the toxemia of pregnancy produced a mydriatic reaction in the same way under like conditions.

Feeling that other toxic matters might cause the reaction, one half c. c. of typhoid vaccine containing over five hundred million of bacilli was injected into a rabbit and the adrenalin technic followed, no reaction appeared in eighty minutes.

A Jewish woman, aged thirty-six, married and mother of three children, long a sufferer from diabetes with a blood sugar under fasting of 176 mg.—to 220 mg. was tested for this mydriatic reaction. It was felt that since adrenalin, according to Loewi, if dropped in the eye of a diabetic will produce mydriasis. Two c. c. of this woman's serum was injected into a rabbit (that had previously reacted to toxic thyroid sera) at 5.08 p. m.

Adrenalin was instilled according to the technic previously described, two drops every four minutes. At 5.54 after twenty-four drops had been instilled and forty-four minutes had elapsed a mild and transient mydriasis appeared. At 6.10 p. m. after one c. c. of adrenalin had been instilled and an hour had elapsed, no fixed mydriasis had appeared, the pupil responding to light intensively applied to the eye.

This experiment was repeated on the same rabbit, when the blood sugar had increased from 176 to 240 mgs. A transient and incomplete mydriasis was produced, the pupil responding to light sluggishly.

This case illustrated the value of the reaction to a clinician. A woman with an enlarged thyroid,

mental symptoms, rapid pulse, weak heart and presenting other symptoms strongly suggesting hyperthyroidism was tested, one c. c. of her serum failed with the aid of adrenalin instillations to produce a reaction after the use of one c. c. of adrenalin and the lapse of ninety minutes. Her doctor told me afterwards that her metabolism was found to be minus eighteen and that she improved greatly under thyroid feeding.

In my previous paper I described one experiment in which the blood from a highly toxic case persisted in causing a reaction after it had been heated to 58° C. for 140 minutes, one half c. c. was sufficient to produce the reaction. The hypothetical substance was not destroyed by heat, and is thermostabile. In the next case I hope to show that the influence of light and oxygen are deleterious. It will be noted that serum that was active soon after withdrawing the blood, lost its mydriatic powers after standing in a room exposed to bright light for seventy-two hours. It will be also noted that serum that reacted in white rabbits failed to do so in young New Zealand animals.

CASE I.—Mrs. E. K. seen with Dr. Swartly. Chief complaint nervousness, palpitation of heart, apprehensiveness. Examination, emaciated female sixty-four years of age, pulse rapid 108, had been up to 120 many times. Thyroid enlarged, hard, adenomatous. Blood pressure 180 systolic. Had been subject to diarrhea which had been hard to control. Had a fine tremor, moist skin, was weak and dyspneic on exertion. Had mild hemiplegic attack recently. Had proptosis of eyes, forehead did not wrinkle, on looking up. Had no Dalrymple, Stellwag or Von Graefe signs. This was without doubt a case of toxic thyroid disease.

At 5.26 one c. c. of her serum was injected into healthy white female rabbit (No. 6) had been used before in these experiments.

After a lapse of thirty minutes and the instillation every four minutes of two drops totalling eighteen drops of adrenalin one to one thousand solution (.54 c. c.) complete mydriasis occurred. The mydriasis began to appear at the end of seventeen minutes but was not complete until thirty minutes had elapsed.

Mydriasis persisted until the end of 180 minutes, eye was proptosed during the experiment, pupil in other eye was not mydriatic, but at the end of the experiment it was somewhat sluggish but not in the least dilated, responding to the stimulus of light.

One c. c. of this same serum, Mrs. E., was injected into a brown male New Zealand rabbit at 9.26 p. m., at 9.29 two drops of adrenalin one to one thousand was instilled into its left eye, this was repeated every four minutes until 10.59, the lapse of ninety-five minutes, forty-six drops of adrenalin was instilled. The usual early and false mydriasis noted in these experiments (due to adrenalin alone) appeared, this quickly vanished and the pupil was mobile until the end of the experiment contracting fully to the stimulus of the light. The absence of the reaction I believe to be due partly to the breed of the animal and partly to the sex. The other experiments were done on white female rabbits almost exclusively.

Protocols of experiments on Mrs. E. K.'s serum, a highly toxic case of goitre are presented herewith.

This woman died in two months after this examination of thyroid disease.

EXPERIMENT No. 1—WHITE FEMALE RABBIT

1 c.c. serum injected at 5.26 p. m.
2 gtt adrenalin installed at
5.27
5.31
5.35
5.39
5.43
5.47
5.51
5.55
5.59 after the lapse of 33 minutes and the use of 18 gtt of adrenalin total mydriasis occurred.

EXPERIMENT No. 2 — BROWN MALE RABBIT

1 c.c. serum was injected at 9.26 p.m. 2 gtt adrenalin instilled at
9.29
9.33
9.39
9.43
9.47
9.51
9.55
9.59 eye preptosed
10.03
10.07
10.11
10.15 pupil sluggish
10.19
10.23
10.27
10.31 sol. adrenalin used
10.35
10.39 46 gtt
10.43
10.47
10.51
10.55
10.59 at no time was there any mydriasis

EXPERIMENT No. 3 — WHITE MALE RABBIT

1 c.c. serum used. It is two days old. Injected at 2.24 p.m. gtt adrenalin instilled at
2.26
2.30
2.34
2.38
2.42
2.46
2.50
2.54
2.58
3.02
3.06
3.10
3.16
3.18
3.22
3.26 pupil markedly dilated but reacted to light
3.30
After the lapse of forty-two minutes mydriasis appeared but it was not fixed; twenty-four drops of adrenalin used at the end of ninety minutes pupil was dilated still but reacted to light.

EXPERIMENT No. 4—WHITE FEMALE RABBIT

1 c.c. Mrs. Eukers serum was seventy-two hours old, kept at 60°F, exposed to light; serum injected at 2.12.
2 drops adrenaline instilled at
2.14
2.18
2.22
2.26
2.30
2.34
2.38
2.42
2.46 pupil dilated but reacts to light actively
2.50
2.54
2.58
3.02
3.06
3.10
3.16 pupil continues to react to light but dilated
3.30 pupil dilated but contracts. Reaction negative, the same rabbit used, also the same eye. The reaction did not occur because of staleness of serum, which was seventy-six hours old.

CASE II.—R. C., male, aged forty. Adenomatous goitre bilateral. Patient admitted to the wards of hospital suffering from rapid pulse and loss of weight. He complained of marked weakness of arms and legs and of difficulty in swallowing.

He was easily excited, the sight of a running dog almost set him wild. His heart ran wild upon excitement and exertion. He perspired easily and became weak. He experienced dark flashes before his eyes. His hands became moist and clammy under slight excitement. He had lost thirty-seven pounds in eight weeks. He suffered from diarrhea when he was ill with an infected knee.

Physical examination revealed a markedly emaciated weak man. A slight cough could easily be explained by pressure on the trachea by a huge bilateral adenomatous goitre. This was hard and seemed to be composed of three distinct lobes. His heart was rapid, a systolic murmur was noted. Apex beat was just outside the nipple line. Sounds weak, pulse Corrigan in type. Trauba's pistol shot phenomena was noted in the femoral artery.

Blood pressure 120-65. The lungs were clear. His nervous symptoms were chiefly mental. Except for a fine tremor of the extremities and exaggerated reflexes of the leg, no other signs were noted. No eye signs were present, excepting that his pupil dilated if his neck on the same side was pinched.

His teeth were in a septic condition, and an abscess of the leg four months previous to his entrance to the hospital probably fired the loaded gun, enlarging his thyroid and rendering it toxic. Metabolism on ad-

mission was 109 plus, this fell under rest and iodine to 39 and 32.

The Goetsch test was applied, his pulse rose from 90 to 120 and his blood pressure also rose from 120 to 140 in thirty minutes. The pulse continued to be fast for about one hour after the test, during which he was most uncomfortable. He declared that after receiving the adrenalin he felt as if he were a clock from which the pendulum had been removed so rapid was his pulse that it resembled the rapid ticking of a time piece. When the pulse rate subsided to its former condition he said that the pendulum is on again.

One c. c. of the patient's serum was injected into a white male rabbit, and adrenalin applied for over an hour to the left eye, no mydriasis appeared. It is possible that the serum was not absorbed. Another rabbit was used. One c. c. of serum was injected into it and adrenalin instilled after the lapse of thirty-three minutes and the use of eighteen drops of adrenalin total mydriasis appeared. The reaction was strongly positive.

After the metabolic rate had declined to its lowest point and then when it began to ascend again a polar and superior thyroid artery ligation was performed on the right side under gas anesthesia. The patient stood the operation extremely well, reacting rather markedly for a few days. The right thyroid enlargement then became softer and smaller.

Subsequently this man after a long rest was operated upon and a subtotal removal of the gland was accomplished by Dr. Charles Mitchell. From this he recovered. Fifteen c. c. of blood were mixed with an equal amount of sterile water and this was distilled slowly in a retort. The first two c. c. of the distillate was injected into a rabbit and adrenalin solution instilled as in the other experiments. After forty minutes and the use of twenty gtt. of adrenalin solution total mydriasis appeared. This is of interest in that it apparently shows that the hypothetical substance is not only thermostabile but is of a volatile nature.

Case III.—Mrs. Stella B., a Polish woman, married, mother of three children, presented every sign of toxic thyroid except eye sign. Her heart was rapid and weak. She exhibited a marked tremor of hands and tongue. Her mental condition and facial expression were such as to suggest a psychopathic condition. She was emaciated, extremely pigmented, and so nervous that sedatives had to be constantly administered to her. The thyroid exhibited marked enlargement in both lobes and isthmus. It was of the adenomatous type. Her teeth and tonsils were septic. Her physical examination otherwise was unimportant. Her metabolism was plus 50.8 after remaining in the hospital it rose to plus 90, a subtotal operation was rapidly performed by Dr. Charles Mitchell. From this she recovered, suffering several attacks of pulmonary edema subsequent to the operation. These attacks were relieved by the administration of atropine and digitalis.

Serum from this woman was injected into a white female rabbit and the adrenalin technic followed as in the other experiments, after the lapse of fifty minutes and the uses of twenty-six drops of adrenalin, a total mydriasis appeared, this persisted for four hours.

In another experiment the serum from this woman was heated in a water bath for ninety minutes at a temperature of 55° C. then the heat was raised to 65° C. for ten minutes. This on injection into a rabbit and adrenalin instilled in one eye mydriasis appeared as before and the reaction was certainly as positive with the heated as with the raw serum.

Eighteen days after this woman had been operated on, she was again bled and her serum injected into the same rabbit to which it had reacted previously. After the lapse of forty minutes there was a sluggish mydriasis which was not total as this reaction demands. After the lapse of an hour and the use of over one c. c. of adrenalin solution there was no mydriasis, both pupils reacted in the same manner to light intensively applied to the eye. If any inference can be drawn from this one experiment it would seem that the thyroidectomy removed the toxic principle from the blood stream. The gland itself produced a reaction after washing and maceration in salt solution as described.

Case IV.—Mrs. B—y, a married woman aged forty-one, was admitted to hospital complaining of heart weakness, high blood pressure and weakness. She had had the usual diseases of childhood, menses regular until last year when they became irregular. One child died at birth. For eleven years this woman had suffered from a toxic thyroid. About this time Dr. Charles Frazier performed a bipolar ligation with temporarily good results. Then she suffered from tremor, heart palpitations and the gland was noticeably enlarged. Physical examination revealed a firm large thyroid gland easy to palpate. So firm was it that an adenomatous change was suspected. Her hand trembled on extending the fingers. There were no eye symptoms. Her heart was not enlarged, a mitral murmur systolic in time was easily detected, there was no decompensation, no edema of the extremities. Her basal metabolic rate was 81.7 pulse rate over 120, and blood pressure 230, no diastolic. The woman was apprehensive and nervous. Being of a very low order of intelligence it was difficult to examine her mental condition. Evidently she was anxious and in mental distress. One c. c. of her serum was injected into a healthy young male New Zealand rabbit. After the lapse of two minutes two drops of adrenalin one to one thousand was instilled into its left eye, this was repeated every four minutes until one c. c. of this reagent had been instilled, after the lapse of seventy minutes there was no reaction.

Thinking that perhaps the sex of the animal and the race might have had something to do with the non-reaction, the experiment was repeated, a white (albino) female rabbit was used as in some of the other experiments.

One c. c. of serum was injected into it and adrenalin intensively instilled every four minutes into its right eye. After the lapse of eighteen minutes and the use of ten drops of adrenalin the pupil became sluggish. After fourteen drops of adrenalin and the lapse of twenty-four minutes full paralytic mydriasis appeared. The pupil was immobile to the stimulus of a bright light held close to the cornea for half a minute. The inference from this experiment being that the New Zealand rabbit was insusceptible to the toxic effects of the reagents. The woman died a month after this.

Case V.—Mrs. A. K., aged twenty, married, mother of one child. This case is a borderline of either neurasthenia or nervously unstable, or toxic goitre, incipient. She was nervous, had a tremor, anxious over trifles. She had had some of childhood diseases, but was never extremely sick with them. Had had sore throat frequently as a child. Had been very sick with influenza.

Physical examination, thyroid easily seen, palpable. Eyes prominent and bright. No Stellwag or Von Graefe sign, hands showed marked tremor. Hand became moist on excitement, no diarrhea. Pulse rapid, rate 100. Had no cardiac abnormalities of rhythm except a juvenile sinus arrhythmia. Menses regular five days, painless. Tonsils septic in appearance. Subsequently these were removed.

One c. c. serum injected into white female rabbit at 6.47 p. m. It was hard to determine the exact time of the mydriasis it came on early but was not complete until about fifty minutes after the serum was administered.

Protocol

6.48 two drops adrenalin 1.1000 instilled in right eye and repeated at every time notation.
6.52
6.56
7.00
7.04
7.10 Dilatation of pupil widely but iris contracts feebly at margin.
7.14 " " " " " " " "
7.18
7.22 " " " " " " " "
7.26 " " " " " " " "
7.30 " " " " " " " "
7.34 " " " " " " " "
7.38 Complete mydriasis at this time, pupil widely dilated does not respond at all.

Reaction positive, fifty-one minutes 26 drops or (.78 c. c.) adrenalin one to one thousand administered. Probably less adrenalin needed. According to the findings of this reaction the case is one of incipient thyroidism (toxic goitre).

Five months after the reaction was obtained, patient was again examined clinically in the lower portion of the left lobe of the thyroid a small adenoma was detected, this was moderately firm, patient's condition about the same. No metabolic estimation was done.

Case VI.—Mrs. C. C., a married woman aged forty-one, in the wards of the Chestnut Hill Hospital. Her chief complaints were weakness, palpitation of the heart, nervousness and mental unrest. She suffered from some neurasthenic pains in the chest. She had had an acute nephritis, three years previous to coming under observation, with edema of the feet. She also gave a history of dyspnea for years. In her childhood she had had scarlet fever, followed by an abscess of the throat and blood infection. In 1925 she had pneumonia. One month before her admission to the ward she said a goitre developed in her throat. She had frequent attacks of appendicitis. Her dyspnea and nervous debility prevented her from working about her home. She was the mother of eight children.

Physical examination revealed a blood pressure of 140 systolic, a metabolic rate of 37.8, a blood sugar content of her blood of 111 mg.—100 c. c., nonprotein nitrogen 11.2 mg.—100 c. c., sulphophenolphthalein excretion 72 per cent. in two hours. Her heart was not enlarged, pulse rapid over 120 frequently. The thyroid was slightly enlarged. Her heart while rapid and weak was without any abnormal signs except those noted. There were no eye symptoms.

This woman had had many toxic infections paving the way for thyroid disease. Nevertheless it appeared to be a borderline case of either neurasthenia or toxic thyroid. One c. c. of her serum was injected into a white rabbit, female. Adrenalin one to one thousand solution was intensively instilled every four minutes into the left eye. After the use of thirty-three drops of serum at the expiration of seventy-four minutes, mydriasis was complete in the eye. There was no proptosis of the bulb after this intensive use of adrenalin. The case was possibly one of mild thyroid intoxication.

Case VII.—Sarah E., aged nineteen years. Toxic goitre, when twelve years of age, one lobe of her thyroid had been removed previously. Her mother had had toxic goitre and died after an operation for it. Father was well and hearty. She had had the usual diseases of childhood excepting diphtheria.

Her heart was normal, pulse slow 72-76, weight 170, metabolic rate 31 plus. Her skin was glossy and satiny. The thyroid lobe was enlarged. An old scar of a previous operation was manifest. There were no nervous symptoms excepting a slight tremor. No eye symptoms were present. Her forehead did not wrinkle, but her pupil dilated when skin of neck was pinched on the same side. There were no mental symptoms. She seemed stolid and placid. Was unable to work as a nurse because of her weakness. Had been taking iodine (Lugol's solution) for three weeks previous to examination. One c. c. of her serum was injected under skin of white male rabbit half grown at 5.05 p. m. Two drops one to one thousand solution adrenalin instilled into left eye at the following intervals:

5.06
5.10
5.14
5.18
5.22
5.26 Primary nonpersistant mydriasis
5.30
5.34
5.38
5.42
5.46
5.50
5.54
5.58 Eye proptosed
6.02
6.06
6.10
6.14 Thirty-three drops of adrenaline used no mydriasis, reaction negative.

Reaction negative, pulse also slow, high metabolic rate indicates goitre of toxic nature but there was no mydriasis, perhaps the treatment had something to do with this. It appears from this case that the absence of a mydriatic reaction is consistent with the normal pulse. The reaction was useful to me in the following case.

Case VIII.—This patient had been treated by various physicians (including myself) for an apparent neurasthenic condition. She had a rapid pulse, faint feelings about the precordia, and a fine tremor of her fingers when excited. She also exhibited an anxiety neurosis. There was not the slightest indication from the woman's appearance that she suffered from hyperthyroidism. She was thirty-eight years of age, strong, vigorous looking; there were no eye symptoms, in the neck there was no sign of thyroidal enlargement, nor could the gland be palpated. She exhibited a pair of septic tonsils, otherwise her physical examination revealed nothing except some substernal dulness extending each side of the manubrium; this area was three and a half inches in width by one and three quarters in height. Her weight was 165 pounds, height five feet eight inches. Her blood pressure 170 systolic, her pulse was rapid. She said that for nine

years it had been so, being worse at the menstrual times. The abdomen was negative, so was her pelvis. Trying out this reaction on her, in view of the substernal dulness and absence of thyroid in neck, a prompt reaction occurred after the lapse of twenty-eight minutes and the use of fourteen drops of adrenalin. Then an x ray was made, a mass was revealed high in the apex of the thorax, also some calcareous glands in the hilii of both lungs. A basal metabolism test was done and a finding of plus 40 found. Subsequently her septic tonsils were removed and now she is having radium treatments to the substernal thyroid, which evidently, from the reaction of the serum and adrenalin in a rabbit, from the high metabolic rate, rapid pulse and tremor, must be of a toxic nature. Without the use of x rays and other modern measures a diagnosis could not possibly have been made. The positive reaction made me suspect the nature of the complaint.

In a previous paper I said that I believed that the administration of iodine by a suspect before trying out the reaction interfered with it. From subsequent experience I am led to the belief that this agent has no direct or immediate effect.

This method, if it proves to be reliable, should have an appeal to those practitioners who have not access to a metabolism apparatus. A few rabbits, two syringes, a test tube, an eye dropper and some adrenalin solution being all that is required save a time piece.

I wish to thank Dr. Roy Langdon and my excellent intern, Dr. Ira Towson, for aid in persuing these studies.

CONCLUSIONS

It has been the object of this paper to endeavor to show that there is constantly in the blood stream and sometimes in the thyroid gland itself (not thyroxin) a chemical poisonous entity which has certain physical properties. It can resist heat even to 100° F., can be distilled and retain its mydriatic properties. It is destroyed by exposure to light and oxygen after forty-eight hours. It seems to be of value in the diagnosis of toxic thyroid disease and the relative severity of the disease can in a measure be determined by the time of the appearance of the reaction and by the time that it persists. It is dependent upon the nervous susceptibilities of an animal with illy developed autonomic system. This is a very crucial factor to take into consideration.

SUMMARY OF ALL CASES

I. Cases in which there was no reaction (nontoxic thyroid disease).	
Diabetes	1
Hypothyroidism	1
Normal controls	2
Symptomless thyroid enlargements	2
	6
II. Cases in which there was a reaction and in which there was no suggestion of thyroid disease:	
Syphilis acute	1
Toxemia of pregnancy	1
	2
III. Thyroid enlargements with toxic symptoms no reaction (cured?)	1
Thyroid enlargements with toxic symptoms positive reaction	12

REFERENCE

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5211 Wayne Avenue.

The Endocrine Glands of Rats in Parabiosis*

PROF. GIACOMO PIGHINI, M.D.
and MARIO DE PAOLI, M.D.
St. Maurizio, Italy

Under the term parabiosis Sauerbruch and Heyde are understood to designate that state of altered individualism which arises when two animals are united in such a way that their organic circulating fluids become susceptible of mutual interchanges. More than a parallel life in the two animals so united, such as the word parabiosis (para) indicates, a material and energetic exchange takes place between the two organisms without altering their separate individuality; whence this new condition may be better designated by the phrase symbiotic grafting coined by Schoxel, or the rats and rabbits joined in this manner may be more simply called Siamese animals, as Morpurgo does.

What interests us is the fact that, when two animals of the same species are united together side by side in such a way that their circulating fluids mingle over all the bleeding surface and are diffused interchangeably in the two organisms, experimental physiopathology affords us in this way a means of attacking a number of problems involved. No need to mention the numerous applications made of this method in these last fifteen years since Sauerbruch and Morpurgo in 1908 published their first interesting observations on the subject. The aim we have set in undertaking the present study is that of ascertaining if in this way some light may be thrown on the obscure problem of the humoral correlation between the different endocrine glands, and as a branch of this to approach the problems of sexuality, of sexual individuality, of the relation between the sex glands and the other organs and secretions of the body. The few studies hitherto made in this direction afford an excellent hope of obtaining some good fruit.

It was a Japanese investigator, Matsuyama, who first drew attention three years ago to the secretory and glandular reciprocity mutually existing between two animals of the same species united in parabiosis when one, for example, is castrated and the other not, or when of different sex. He employed white rats in his experiments and obtained, briefly, these results:

The first marked alterations noted in parabiosis of a male with a female were in the sex glands of the

*From the Lazzaro Spallanzani Scientific Laboratory of the Reggio Emilia Psychiatric Institute, directed by Prof. G. Pighini.

Siamese pair. Only in the early period did corpora lutea develop in the ovaries; at a later period, instead of this there was increase of the interstitial gland and formation of numerous cysts. The testicles developed abundantly in the early stage only, and degenerated in succeeding stages. The changes in other organs appeared in the second stage and were consequent on those of the sex glands. When these were markedly degenerated, the uterus presented degeneration and atrophy and the adrenal capsules and the thyroid showed the same type of alteration as is encountered after castration; thus only the anterior lobe of the hypophysis was changed, as after castration or during pregnancy.

If a male is admitted to such a couple, the female of the pair does not conceive; in like manner, the male of the pair is incapable of impregnating females. But on supplying a male to a pair of females joined in parabiosis, both of these may beome pregnant. On the other hand, the endeavor has always been unsuccessful to impregnate a female united to a castrated male or with another female which has been castrated: this results from the alterations brought about in the ovary or uterus of the uncastrated female. The alterations in other organs in the latter instance are proportional to those which have taken place in the castrated companion. Thus, in the advanced stage there occur atrophy of the uterus and mammæ, hypertrophy and increase of lipoids in the adrenal cortex, hypertrophy of the medulla, increase of large basophile cells, the socalled cells of castration or pregnancy, in the anterior pituitary lobe, with deficiency of cyanophile cells.

From this and other observations Matsuyama concluded that the hormones arising from the testicles and ovary act in a way antagonistic to one another, and cause modifications in the adrenal capsules, the pituitary and mammary glands, which become apparent in castration, in pregnancy, and in parabiosis between male and female through the degeneration or atrophy undergone by the ovarian follicles. Even pregnancy and the suppressed genital function of the masculofeminine pair in parabiosis must be considered as a state akin to castration.

FIG. 1.—The seventh pair of rats, the female dying on the seventeenth after operation.

This theory of the Japanese investigator has been thought extravagant and has received much criticism in certain very recent studies of the subject. Mayeda, for example, in rats of different sex in parabiosis did not find histological alterations of the sex glands, and especially of the testicle. Schmidt, one of Sauerbruch's pupils, calls in question the failure of the female in such a pair to conceive. Nissen and Romies deny that the resultant alterations depend on antagonism between the hormones of the two opposed sex glands, but consider that they proceed rather from dysharmonic parabiosis, from reciprocal intoxication due to the different metabolisms of the two organisms artificially united.

In view of these contradictory interpretations and observations it has seemed of interest to follow out from their origin the experimental studies in this field of research as concerns glandular correlations. We, too, have chosen white rats, formerly recognized by Morpurgo as best suited to studies of this sort, and began our experiments by uniting together males with nongravid females, always selecting animals already sexually mature, from five to eight months old. The experiments were made by the two most common methods of parabiosis—union side to side of the thigh muscles and of the skin over a considerable width forward to the region of the axilla and the neck—or union of the two peritoneal cavities internally and the skin externally. The latter procedure, however, most frequently resulted in death within twenty-four hours and was abandoned in favor of the former. That a direct exchange of fluid took place with simple musculocutaneous junction was proved in all our rats in parabiosis by finding iodine in the urine of one individual when a solution of iodine had been injected into the other member of the pair. The result of this test was always positive.

Twenty pairs were studied in all; but we present the anatomicopathological reports of only twelve of these, selected among the more significant. We excluded from study ten other pairs which resulted badly through poor union and the production of fetor at the juncture, or through septic cavities in the animals. The principal facts are reported respecting the twelve pairs of animals examined, in the order of increasing duration of parabiosis. Only one of these is a parabiosis of male with male. Of two other pairs of males the data are omitted, so as not to encumber the table. All the others are between a male and a female.

In this series of experiments pairs of young animals received the preference, those of the same age and weight when possible, the youngest two months, the oldest eight, the greater part from three to five months, or at the epoch of initiation of sex function. Each couple was kept in a separate cage and fed a varied diet of wheat, maize, rice, bread, raw vegetables, and a few bits of cheese.

The twelve cases described below, all chosen among the most noteworthy, offer results for the most part confirmatory of one another, so that a characteristic type of somatic and histopathological reaction is possible to determine from this experimental condition (Fig. 1).

The first two pairs were killed the day following the operation; of the third, the male died after four days and the female was sacrificed (with chloroform); of the fourth, the female died after eleven days; both of the fifth pair died on the twelfth day; both of the sixth pair on the fifteenth day; of the seventh, the female died on the seventeenth day; the eighth was killed the twentieth day; of the members of the ninth couple, one died on the twenty-second day and then the other also was killed; the members of the tenth pair were killed on the thirty-first day; those of the eleventh died on the sixty-fourth day;

those of the twelfth were still in full health on the 165th day and were then sacrificed. Death was inflicted either with chloroform or by drowning.

As may be seen, a considerable part of our rats were killed suddenly in the first seven days following the operation of parabiosis, and the reason was that they all had become toxic. But there were pairs which had resisted long, and others which would certainly have resisted to the end, if they had not been sacrificed. Thus, omitting the cases of death from probable infection, there remain four cases in which it may be maintained that the cause of death was grafted in that condition of mingling of fluids into which the animals were brought by the cross bleeding of the operative procedure.

The disturbances produced by this condition become manifest immediately after the operation. Not longer than fifteen to thirty minutes later the animals become restless, agitated, at times furious and bite one another, until they reach a state of trembling after a few minutes of severe shaking, which may become a tonic clonic jerking and amount to a true convulsive seizure. This state lasts some time, until the animals recover and begin first to drink and then to eat. Frequently congestion of the conjunctiva is noted, even capillary hemorrhages into the sclerotic. Another phenomenon constantly observed the day after the operation is considerable edema of the testicles, but this probably results from extension of the irritative process in the superficial tissue adjoining the incision.

These phenomena were encountered by us in every pair of Siamese animals, whether of male united to female or of male to male, whether in those operated on by celostomy or by musculocutaneous suture (decidedly accentuated in the latter), and afford, in our view, proof of an evident reaction of the nervous system to the mutual intoxication which the secretory exchange in one member of the pair exercises on the other, an acute intoxication which is later modified by mutual immunization.

This immunization is not so sufficient and complete as to preserve the two associates from the ultimate harmful effects of their histohumoral marriage. We have seen that the majority of couples tend, after a varying interval of time, to emaciation and death of one of the members, carrying with this the death of the other (generally we at once forestalled the final death of the surviving companion).

On autopsying the dead companion signs were not found of special affections in any of the individual internal viscera, to which sickness and death could be ascribed; these were all greatly congested in comparison with those of the comrade, a fact already noted by Matsuyama and others and due probably to relaxation of vascular tone in the one first dead. But the changes observed in them on histological examination differed very little from those seen in pairs killed in a condition of unquestioned health. These changes, as we shall see, are characteristic of such pairs and betray the toxic condition to which the entire organism is subjected, a condition not severe in some pairs and well borne by them, in others illy tolerated, especially by one or other of the partners. Usually it is preceded by hypotrophic phenomena, in one leg for instance, in the tail, which may become gangrenous, and by falling out of the hair.

The reasons for variability in individual reaction are difficult to determine. They reside in the special constitution of each individual, which causes the humoral combination of the two to result in individuals of similar or of quite different constitution and histochemical interchange.

We were careful to select always for every union animals of the same age and the same stock, bred for years in the same way in our establishment. In spite of this, the variability of the reactions was very marked. Only in pairs born in the same litter and operated on at the youngest age (as in the seventh pair, operated on at fifty days old) did mild reactions occur and a greatly prolonged duration of life.

ANATOMICOPATHOLOGICAL EXAMINATION

The principal anatomicopathological facts are given in the table. Above all it is worthy of remark that all the animals at time of death, as well spontaneous as artificially produced, had lost weight, and especially those whose body development was completely attained. Exception is made of the seventh pair, whose members weighed respectively sixty grams and fifty-five grams at the age of fifty days and 180 grams and 140 grams when they were sacrificed after 165 days. The other pairs united in the same way manifested at the same age and throughout the experiment a regular progress of depletion.

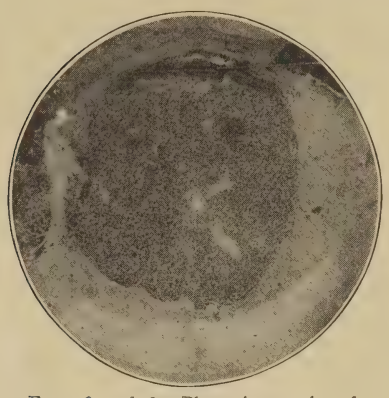
Macroscopically the different viscera had a different appearance according as the animal died before its companion or both were experimentally killed. In animals dying first in a pair, as already said, all the viscera, and especially the pituitary gland, the liver, and the spleen appeared turgid with blood. In many of the males sacrificed in apparent health a volume, a weight, a consistency of testicles were noted which were below normal.

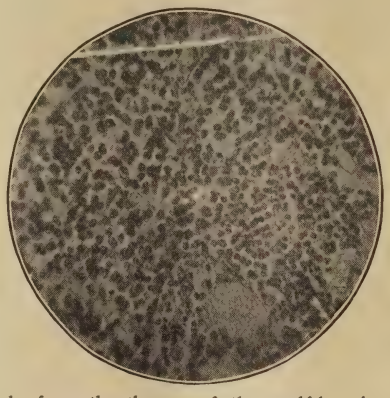
Parts of the different viscera were fixed suitably for histological examination. The fluids used by preference were formol and a mixture in equal parts of ten per cent. formol with saturated solution of bichromate of potassium for the brain, pituitary, lungs, liver, kidneys, adrenal capsules, pancreas, testicles, and ovaries. The thymus was fixed in absolute alcohol, the sex glands in Carnoy's solution, Tellyesniezki's, Sanfelice's (one per cent. chromic acid 160 c. c., formalin eighty c. c., acetic acid ten c. c.), Flemming's, Ciaccio's, with appropriate staining (for Carnoy staining with Pappenheim and Biondi, for Tellyesniezki and Sanfelice with Regaud's blood alum and safranine, for Ciaccio with Sudan III and hematin). These necessary matters of technic being understood, it becomes possible to follow in the ovaries and especially in the testicles all the phases of the germinal cells, and in the latter the various nuclear forms (chromosomes, etc.) of the seminal sequence. (Excellent preparations were obtained from the testicles with Sanfelice and Tellyesniezki.) In order to estimate the lipoid and anisotrope substances (by the polarizing microscope) the adrenals, ovaries, and testicles were sectioned after fixing in formol and bichromate of potassium and hardening and then were stained with sulphate of Nile blue.

The essential facts will be enumerated which were observed in individual organs by histological examination, and inferences will then be drawn, by considering them in comparison with the normal organs of

rats of the same age, as to the effects of the condition of parabiosis in animals.

One of the first organs to undergo modification in the state of parabiosis is the thymus. It was constantly found altered in pairs which did not survive beyond twenty-four hours after operation, and always more changed the longer they had remained in this susceptibility to staining together with its outline (with hematoxylin and Pappenheim it becomes always a clear violet, while the cells still remaining integral of the neighboring area maintain their deep blue coloring). The cell membranes assume the appearance of shapeless masses, which evidently end by disintegrating and being absorbed. When these





Figs. 2 and 3.—Photomicrographs of a lobule from the thymus of the twelfth pair. Cp. plasma cells.

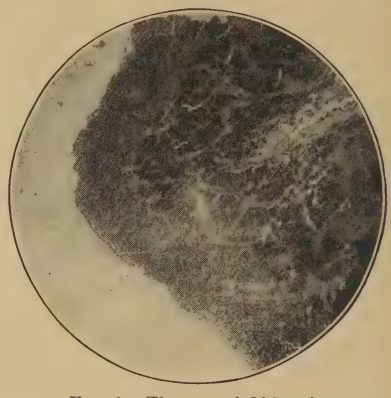


Fig. 4.—Thymus of fifth pair.

condition and the more serious the morbid reaction observable in the paired couple. A change was also found in pairs of animals of the same sex and in those of opposite sex which, united at an early age, seemed to endure the new state without resenting it. The thymic alteration was of the same type, except in degree, in all these instances, and differed from the usual modifications of this organ in infections, in vagotonia, and after exposure to the x ray, having however, a certain point of contact with its physiological involution as manifested in advanced age.

A characteristic of these thymusses is the rarefaction undergone by the small round lymphocytic cells (the socalled thymolymphocytes) of the gland, together with the enormous invasion of plasma cells. The rarefaction of thymolymphocytes does not appear areas of scarcity of the cortical cells appear at the outset (as is seen in the tenth pair, sacrificed on the fourth day of parabiosis) there are present in them numbers of plasma cells, mingled with the greatly altered thymus cells. These are seen first in the severed connective tissue vessels of the cortex and seem to accumulate in the areas of rarefaction, in which they sometimes are found alone, resembling a pure culture. From these areas the rarefaction of the round lymphocytes extends to the whole cortex, which little by little becomes literally invaded by plasma cells.

Figs. 2 and 3 show a lobule from the thymus of one of the twelfth pair, which died the day after the operation (Fig. 2 is slightly enlarged; Fig. 3 more so, up to the eighth power). The rarefaction of thymo-

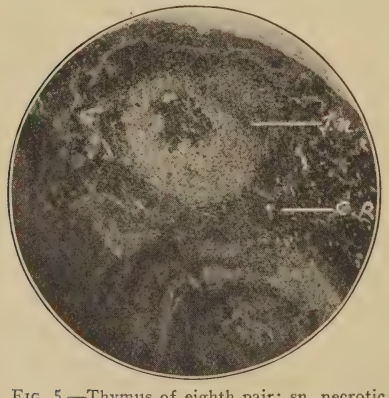


Fig. 5.—Thymus of eighth pair; sn, necrotic sequestrum; cp, plasma cells.

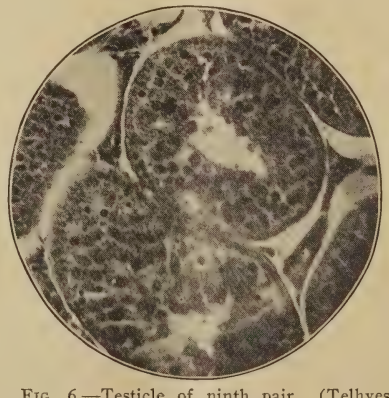


Fig. 6.—Testicle of ninth pair. (Telhyesniezki, blood alum).

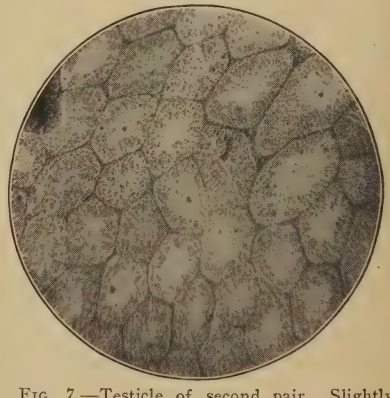


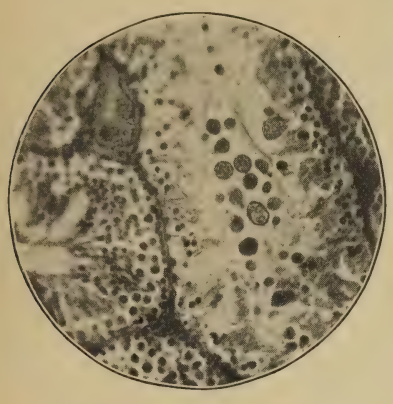
Fig. 7.—Testicle of second pair. Slightly enlarged.

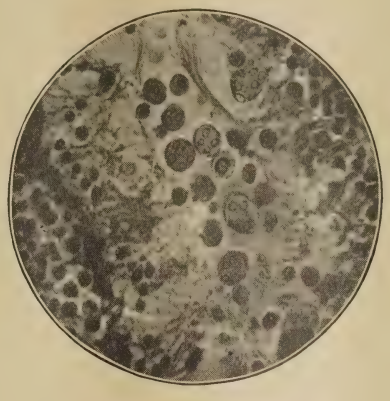
uniformly in the cortex, where, it is to be noted, groups of them separate the glandular structure from the external medulla, but the process begins at certain points in round or oval areas by a progressive change in these elements. They increase, becoming paler and oblong, their limited protoplasm tending to blend with the nucleus, which soon loses its ready lymphocytes in the gland is extreme: the cortical and medullary zones are no longer distinguishable; on the right side of the figure there is a moderate invasion of plasma cells, while on the left they appear in the tissue like a pure culture. The vessels are widely dilated.

A similar appearance was found in the thymus of

one of the fifth pair, sacrificed on the thirty-first day, although the animals, especially the male, exhibited an appearance of complete health. Fig. 4 shows the cortex depleted of cells and invaded by plasma cells, which are massed at the right in pure culture.

In some cases we observed that the areas of rarefaction and degeneration of lymphocytoids progressed to extreme cytolysis, to the formation of detritus and necrotic sequestra in the interior of the cortex, while the plasma cells were clustered near by. An example of such an appearance is seen in Fig. 5, the female of the eighth pair, which died the seventeenth day after the operation. The plasma cells are seen in all their phases; most frequently large and hypertrophic; less often taking on, under Pappenheim, a metachromatic coloring with granulations prevailingly wine red or dull yellow, and with a degenerated appearance; sometimes in certain areas there exists a phase of Unna's granulation, where is seen the same wine red colored detritus of the protoplasm of normal cells (with Pappenheim's pyronine). The plasma cells are always numerous in the connective tissue around the glands and in some cases are diffused throughout the severed connective tissue in the neighborhood of the submaxillary glands. It is difficult to decide from these indications whether these come in reality from the vessels, as many think, or arise locally through the favorable conditions found here. It may be both phenomena will prove to be freely produced locally by the plasma cells held in the connective tissue meshes of the gland.





FIGS. 8 and 9.—The large round bodies, shown in Fig. 7, greatly enlarged.

FIG. 10.—Testicle of second pair.

After the thymus, the glands most decidedly affected by parabiosis are those of sex. Their behavior is, however, very variable and serves as an index of the greater or less effect incurred by the organism in the new state of symbiosis. In pairs united early, as was the seventh pair, and bearing the condition well the structural modifications of these glands are slight or may not appear at all on histological examination. In all the others they are more or less pronounced according to the duration of the parabiosis and to individual reaction. In some pairs, such as the ninth, animals of about six months old which died the day following the operation after a series of violent convulsive phenomena, they are most precocious and in these cases the more the testicle has been injured. In other cases, on the contrary, where after a time the female has acquired a decided resentment for the male, greater changes occur in the ovary.

Let us see first how the testicles behave. In pairs of males studied not longer than two months after

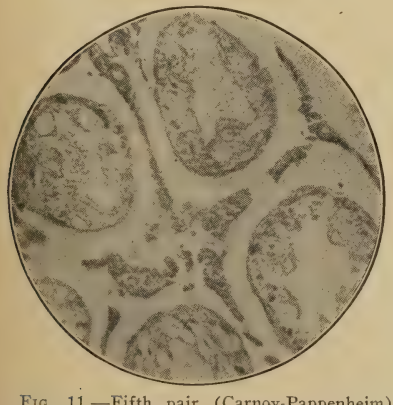


FIG. 11.—Fifth pair (Carnoy-Pappenheim) showing tubular degeneration.

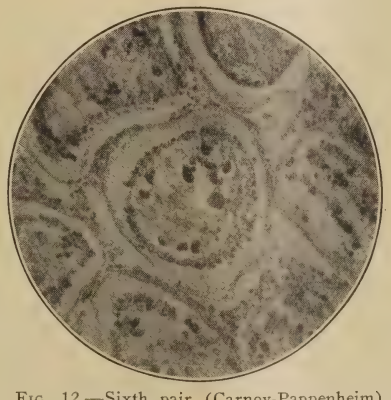


FIG. 12.—Sixth pair (Carnoy-Pappenheim), showing tubular degeneration (much enlarged).

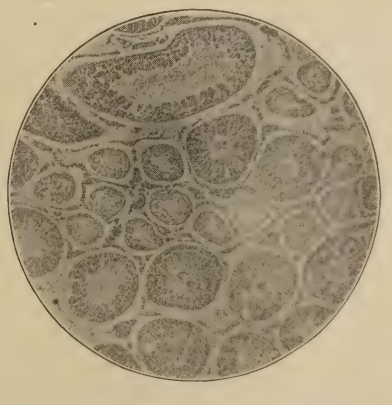


FIG. 13.—Second pair (Carnoy blood alum).

operation they are found normal or with few alterations of the kind described below. In heterosexual pairs a high percentage occurs of early alterations, some of them exceedingly early. Such modifications seem to follow a uniform pathological course.

One of the early phases, which was manifested, for instance, in the ninth pair twenty-four hours after operation, is that photographed in Fig. 6. The greater part of the tubules are normal with the seminal series well differentiated. But there are numerous tubules in which are seen abnormal cells, generally located in the second zone among the spermatocytes and derived from the first division of spermatogones; or else more internally near the centre of the lumen, differentiated by being a little smaller than the spermatocytes of the first division and a little larger than the spermatids, and by having an intensely colored protoplasm and a pycnotic nucleus also intensely stained, homogeneous in its mass coloring (Fig. 6), and no longer displaying chromosomes in the nuclei of neighboring cells. In some other specimens of this type the nucleus is not a single mass, but may be divided into two groups of chromatic substances.

These cells, the darkest and most homogeneous in the microphotograph, represent the first stage in the alteration of spermatocytes. They are encountered in fact in the testicles of pairs which have survived a considerable time and which present alterations and highly complex degenerative forms. In the latter, as in the first (twenty days) and second couple (twelve days), are found cells which seem to belong to the spermatocytes of the first and second order with nuclei in various phases of degeneration, devoid of chromosomes and having in their place either a single chromatic mass or a few minute particles; while in others the nucleus is joined with the protoplasm in a single rounded mass (stained red by pyronine).

Besides these cells, there are other forms characteristic of these testicles, corresponding evidently with those described by Matsuyama in various subjects of parabiosis and called by him giant cells (*riesenzellen*). This is markedly so in a testicle of the second pair, in which the male died on the twelfth day after operation. In Fig. 7, slightly enlarged, we see in many tubules, large bodies, round in form, derived, it may be, from the basal series, appearing at the centre or, greatly enlarged, in Figs. 8 and 9. In these enlargements of the preceding figure these forms seem to result from a protoplasmic mass containing within it numerous small round cells, clear at the centre, with edges deeply stained by basic colors, and of the size of spermatids. In some fields we counted as many as thirteen of these giant cells whose protoplasm is clear and stains feebly with acid stains (red with eosin and yellow with picric acid) and becomes greenish with methylene green. In all probability these formations represent degenerated spermatocytes or degenerated spermatids enclosed in a protoplasmic mass of spermatoblasts. In fact, in some of the tubules of these testicles such formations are not rounded and situated in the centre of the lumen, but oblong, ragged, and located near the periphery in the situation of spermatoblasts, where normally, at this stage of the evolution of the tubule, ought to be found groups of spermatids in process of transformation into spermatozoa in the centre of protoplasmic masses of spermatoblasts (Fig. 10). Here instead, owing to various local toxic conditions, the normal evolution of spermatids into spermatozoa is no longer taking place, but the final elements of the seminal series are undergoing degeneration, so that it is difficult to decide whether they are spermatocytes of the second degree or spermatids enclosed in protoplasmic masses of spermatoblasts, which are detached from the wall and lie in the lumen in the form of a rounded body, where they go to final degeneration.

Tubular degeneration furthermore proceeds beyond this stage of giant cells. Spermatogones cease to be produced, while spermatocytes and spermatids, no longer evolving into spermatozoa, pass in process of degeneration through the various phases of pycnosis, of chromatinic fusion, of cellular lysis, until nothing but detritus remains in the tubules, consisting of chromatin masses in the form of extensive deposits of protoplasm resembling cellular remains without nuclei, so that every morphological element has disappeared and the tubules are reduced to the connective tissue membrane of their own walls with rarely a Sertoli cell remaining. These phases may be followed in Fig. 11 (the fifth pair, whose male was killed on the thirty-first day) and in Fig. 12 (the sixth pair, killed the sixty-fourth day), enlarged to the eighth power; further in Fig. 13 (second pair at twelve days), slightly enlarged, where is seen, interspersed among normal tubules, a succession of atresic tubules devoid of cells of the spermatic series. (These are from the same testicle as Figs. 7, 8, and 9.)

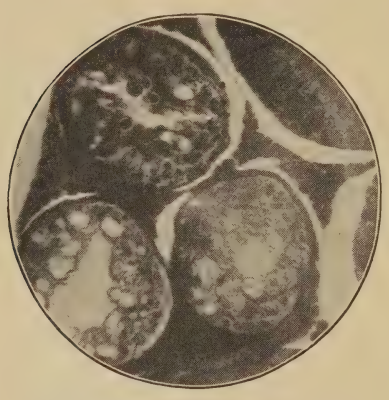


Fig. 14.—Fifth pair (Fleming-Safranin).

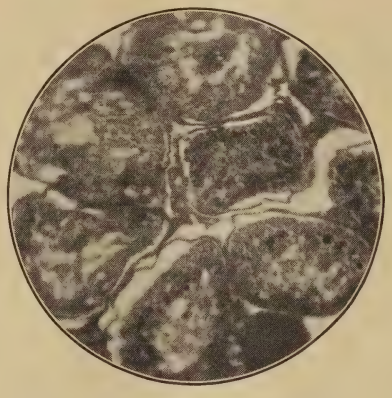


Fig. 15.—Sixth pair (Fleming-Safranin).

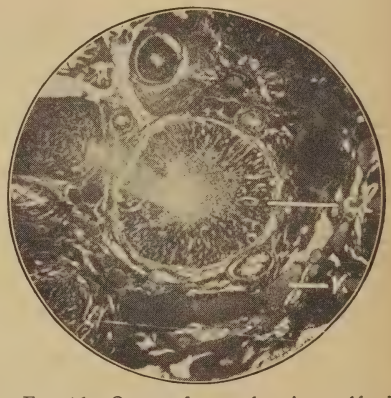


Fig. 16.—Ovary of seventh pair; v, blood-vessels; cl, corpus luteum.

(To be continued)

Historical Medicine

Toothache Three and a Half Centuries Ago*

THE HONORABLE WILLIAM RENWICK RIDDELL, LL.D., F.R.H.S., &c.
Toronto

Scientific dentistry is but of yesterday, but Adam had the toothache, at least every generation of his sons has had: and it may be of interest to know what the best men in olden times thought of it.

In Nancy, in 1572, was born Nicholas Le Pois—the plebeian name Le Pois, the pea, he latinized to Piso—educated in Paris under Jacques Dubois, who latinized his own name to Jacobus Sylvius and became a famous writer on semeiology. Piso advanced in knowledge of medicine as it was then understood and, in 1578, was appointed physician to Charles III, Duke of Lorraine. In Frankfort, in 1580, he published a ponderous folio *De Cognoscendis et Curandis Præcipue Internis Humani Corporis Morbis* . . . which was a compendium of all that was known and guessed of medical science—*de omnibus et quibusdam aliis*. He died in 1590. The celebrated Herman Boerhaave nearly fifty years after his death edited it, adding a preface, and published it at Leyden in 1736; it was again reprinted at Leipsic in 1766, in two volumes octavo.

Whether Boerhaave deserves the reputation which he has of being the most famous physician since Galen's time, everyone must judge for himself; but it is certain that he was a man of great ability, learning, diligence and candor—"a great savant, physician and man." He was a real eclectic, taking truth wherever he found it—from regular or quack, Methodist, humorist, iatromechanic, iatrochemical, iatromathematical, or spagyrist—and besides, he wrote good Latin which all physicians of his time and even a few of ours, could not accomplish—I have heard it suggested that a dentist here and there might fail. Not least of his merits, he was the first to establish permanently the clinical method of instruction, without which modern medicine would be lost.

I use the Leipsic edition of 1766 and confine myself to toothache contained in Chapter xlviii of the First Book—*De dolore dentium.* Although Piso in this work cites more than forty authorities from Hippocrates down, in this Chapter he is to a certain extent "on his own." He leaves aside the other affections of the teeth—projecting (*exerti*) *or worn* (*atteriti*); set on edge by cold or acid food, blackened from lack of cleansing, or livid from sweet and hot food, and crude and crapulous expiration; loose and wobbly (*vacillantes*) from external force or lax alveolus—the author attacks at once toothache because it is the most serious and is to be considered among the greatest tortures (*maximis tormentis*).

"Serious pain of the teeth is called odontalgia from the symptom and the part affected. The part affected is believed by most, if not all, to be manifold. For either the body of the tooth itself is afflicted, as there is no doubt that the teeth (although they are bones) can feel and suffer; or it is sometimes the nerve, which is a branch of the third pair distributed to every tooth and lying at their root. Not seldom the gums are inflamed. But a learned man who lived in our time thought that the nerve alone has any sensation and accordingly alone feels the pain. He says that the tooth suffers because the nerve is suffering, just as a man sees, not the whole body seeing but the eye only. . . . Others say that the tooth seems to feel and suffer because it receives a part of the gustatory nerves of the third pair—the nerve lies at the root of our tooth and so we believe the tooth itself suffers pain."

But the fact that when the tooth is extracted some part of the pain remains, shows that the tooth does not bear the pain; and if it is extracted the nerve breathes more freely, as it is neither stretched nor pressed by the tooth. But enough of the part affected.

The affection is itself the symptom and, as in other affections, it follows some want of health (intemperies). . . .

To speak briefly as to the causes. "If the abnormality is a hot cause the result is inflammation, but the gums rather than the substance of the tooth itself or the nerves are affected. If the fluxion is cold it is chiefly from vitreous phlegm and the pain is most severe."

The author now after the fashion of medieval physicians indulges in a page or two of philosophical disquisition on *calor, siccitas, humiditas, destillitio, humores, defectus, redundantur,* etc., which we may pass over as well as the *prognostica*—and come at once to the *curatio,* treatment.

"If the pain arise from heat, ptisanes are to be taken, gruel (alica), lettuce, cucumber and the like, to be used in moderation and softened lest the teeth should be irritated. Patients are to abstain from wine and use water, in which has been decocted coriander or cinnamon seed . . . nor should they do what so many do, eat the hottest foods and drink the coldest wine or water; that excites the most severe pain, it rots the teeth and ruins them. Let them avoid sweet food, as honey and sugar as well as fats and milk. It is wise to cleanse the teeth . . . and wash them with wine. Let them also avoid acid and tart foods and everything tainted. Every effort should be directed to keeping the teeth from decay. Although such directions are common to all diseases, it is well to give them here before descending to the remaining treatment of this affection from heat.

"To put it tersely, frigids are to be exhibited but not frigid in excess—for the teeth are injured by the excessively frigid, of course because they are themselves so frigid and wholly bloodless. It is to be observed, too, that when the gums are affected the remedies are to be applied to the bare places affected which are free from all kinds of pungency, whether from the moderately acid or of the earthy character. Consequently they shrink from vinegar as from a sharp and hostile sword: it corrodes the

*Written for the Academy of Dentistry of Toronto.

gums by its own acidity. The most soothing thing for them would be asses' milk when they are very painful and inflamed. And pimpinella triturated and applied helps a swelling of the gums.

"Where the teeth alone are affected or the nerve pellicles along with them, then together with these healing medicaments we add those which in their own substance consist of tenuous parts by which the force of them is carried deep within . . . and for a mouth wash, we prepare a decoction in white vinegar of root of halicacabus, aizoon, portulaca, perdicium and licorice. It is helpful to hold in the mouth a decoction of violets in wine.

"If there is a sensation of intolerable heat, use is to be made of hyoscyamus leaves or seed of garden pepper or lettuce seed decocted in white vinegar; oil of roses may be held in the mouth or oil of myrtle mixed with a little white wine: and the head should be moistened with the same oil of roses and it should be dropped in the ears. So too, a decoction of earthworms in oil is to be dropped into nearer ear; and a decoction of them with the oil of roses or of myrtle or oil prepared from the nymphæ and pepper should be used as an unguent on the external parts adjoining the aching tooth."

Having now disposed of the treatment of odontalgia *ex caliditate,* the doctor proceeds to the treatment of that arising *a causa seu intemperie frigida,* from a cold cause of indisposition.

"If there is a simple toothache from frigidity, the food should be ptisanes with pulegium or with rue; or pepper should be added after they are prepared. So, too, gruel of spelt or petroselinum. The drink should be wine but in moderation. For a mouth wash, a decoction should be made in vinegar or wine of origanum, calaminth, hyssop, dictamnus, satureia. Moreover a decoction of veratrum niger eases pain arising *a frigiditate:* in the case of those on whom, sensation is quickly responsive, these decoctions should be made in posea. A decoction of fat woods such as tars or pitches is also helpful—these tars may be boiled n oil. It is of advantage, too, to moisten the head with oil of camomile, anise, iris or rue—as also the external part near the aching tooth. Castoreum decocted in oil should be dropped in the ears. Suffitus from the tooth of a dead dog is recommended, the smoke being taken into the mouth, and then the dog's tooth itself burnt and rubbed up in a little vinegar is to be held, hot, in the mouth. By reason of the special property of its whole substance the castoff skin of a serpent cooked in wine or vinegar is helpful, the same baked and ground up applied to the tooth with oil is also helpful."

Now the author deals with the treatment of the third kind of toothache—that arising from humidity.

"If the teeth are affected from humidity, the diet should tend to dryness with daily abstinence from food. The food given should be such as can be supped, gruel, bread moistened with soup, fine wheat flour, rice, polenta mixed with honey water, millet, lentils, the drier mountain birds, of vegetables, cabbage and the like. For drink, honey water, or water with a little wine added.

"During the pain, the place should be fomented with millet and salt. Mouth washes should be exhibited, astringent, drying or salt, unless the gums are also affected. Consequently we exhibit green olives decocted with tart vinegar and alum mixed with vinegar; in like manner, pomegranate rind and calyx, myrtle berries, balaustia, olives, blackberry leaves, cypress pills, the root of the wood sorrel; and anything which has by nature an acid quality if you concoct it with a little vinegar or wine is helpful if the mouth is washed with it. No little helpful is an ointment made of diamoron confection particularly if it has powdered alum added—or an ointment made out of the juice of nuts: so, too, the dried root of cinquefoil and stag's horn.

"If the teeth have become loose from old age, powdered alum ground up with troglodytic myrrh is helpful to them."

Now comes the fourth class—toothache *a siccitate,* from dryness.

"If the pain arises from dryness, the proper diet will be barley water, morsels of bread, moistened with chicken soup, cucumbers, mallows, soft boiled eggs and whatever food is suitable for patients that are deficient in moisture. The drink should be light wine diluted with water. Sharp and acid medicaments are to be avoided . . . least of all should astringent and moderately moist washes be applied such as hot water by itself—steam from water should be applied with a sponge.

"A mouth wash should be prepared from a decoction of bran or licorice or mallow—or from barley water or starch diluted with sapa or hot water. Asses' milk administered by itself is very useful.

"So far we have been dealing with the treatment of simple indispositions; however, if they are of mixed origin it is quite easy to discuss the treatment of such mixed diseases. In those indispositions which consist . . . in an excess of humors of course (palam) the first thing to do is to reduce the redundant humor by proper purgation . . . then treat the disease. When it happens that toothache makes its appearance from an excess of humors and a redundancy of blood, this should be evacuated by venesection of either the humeral or the median vein. That vein should be cut which has reference to the locus of the affection; and if it be necessary, the vein under the tongue may be cut or cupping glasses applied to the scapulae. If anything prohibits bleeding, reduce the superfluous humor by moderate and slender diet."

Now come topica, the topical application. "The body as a whole being evacuated, to the aching teeth are applied these things that are repressive and repellent and, afterwards, those that are partly repellent and partly discutient. There are, indeed, few diseases that call so much for repellents; and these are the very ones which arise from a minor cause. Consequently we are often obliged to mix discutients from the first—or according to Galen, a little later.

"If the pain arises from inflammation of the gums, the most useful remedy is lentiscus oil, retained in the mouth—it is not nauseating, it is repellent without unpleasantly acid taste and discutient without mordacity. Too strong astringents are to be avoided, from which the parts would suffer as from a contusion, just as from acids like from erosion—the moderate are to be adhered to—after lentiscus oil, asses' milk, sapa or the juice of dates. The decoction of stonecrop is also effective. For affected in their proper substance or the underlying nerve, the strongest medicaments are to be used.

"The teeth are to be washed in vinegar in which oak galls have been decocted or the root of the halicacabus or myrtle leaves; in process of time, discutients are to be exhibited such as hyssop, melilot, fenugreek, althea, pulegium, origanum.

"Stupifacients should not be employed, except in the last resort and except in case of excess of hot humors. If there should be an excess of bile causing erosion of the teeth, the condition of the whole body not alone of the head is to be looked to and purgation by cholagogues resorted to. . . . If there should be an excess of frigid humors, and the toothache then arise, after an evacuation of them from the whole body including the head—in which case it is well to use antiphlegmatics which have the force of moderate astringents and strong discutients and should be administered hot, such as rue, polium, pulegium, origanum, hyssop, or caper root decocted in vinegar or wine—it will be advantageous to use the same treatment as for toothache *ex frigida aut ex humida intemperie,* from cold or humid indisposition."

(To be continued)

Contributors to the Science of Medicine

Sir Charles Bell

Charles Bell was one of that band of workers, and especially, perhaps, clinical workers who helped to make the name of Edinburgh famous throughout the world for its medical and surgical school. Without the enormous clinical material of London and other large cities, Edinburgh has more than held its own in the realm of medicine and surgery. In this country no British school of medicine and surgery has a higher if so high a name as Edinburgh and, as said before, this is largely due to the fact that there have been trained and developed in it some of the leading lights and teachers of medicine and surgery, and that chiefly on this account among those outside Great Britain it has gained and maintained a name unexcelled in Europe. Many of the great surgeons and physicians of this country of former times received their training at Edinburgh, Ephraim McDowell, for instance, although it must be said that his original views were developed and put into practice in his own country.

Charles Bell and his elder brother, John, were among the great surgeons of Edinburgh. Charles was born there in 1774, the youngest son of the Rev. William Bell, and received the first part of his education at the High School, Edinburgh. John, his elder brother, was already a celebrated surgeon, and Charles, who had early turned his attention to anatomy, assisted his brother in his anatomical lectures and demonstrations. Even before he had become a fellow of the Edinburgh College of Surgeons, he had published the first part of his plates of dissection.

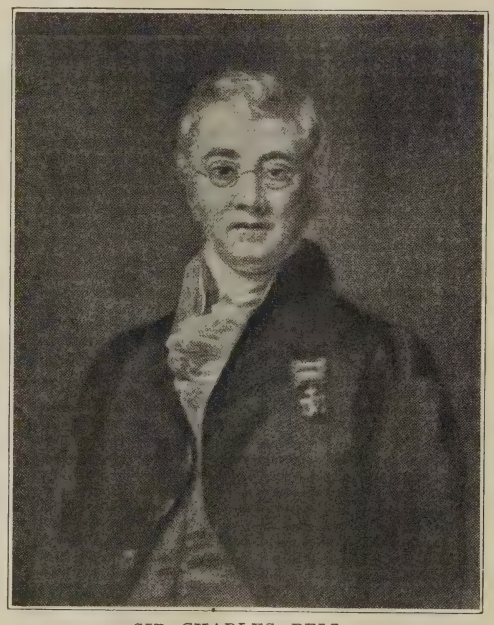
In 1799 he was admitted a member of the Edinburgh College of Surgeons, and immediately after was made one of the surgeons of the Royal Infirmary, then the only hospital in Edinburgh, where he showed remarkable skill as an operator. He was one of the first to use the knife in lithotomy, and on the first occasion on which he did this operation at the hospital succeeded in extracting the stone in two minutes and a half, to the astonishment of those who had been accustomed to witness the protracted suffering of the patient under the operation with the gorget.

A somewhat trivial occurrence was the cause of Mr. Bell leaving Edinburgh. A controversy arose with regard to the proposed repeal of a regulation, under which all the fellows of the College of Surgeons in turn were allowed to operate at the infirmary. These differences of opinion were embittered by imputations on the purity of the motives of the senior members of the college and by the insinuations that they were actuated by unworthy jealousy of the younger men. The dispute became so acrimonious and abusive that the profession of Edinburgh was split into rival camps led on the one hand by the great Dr. Gregory, whose name has lived largely by his powders, and on the other side by John Bell. It developed into a personal altercation in which the time and brains of two of the most distinguished medical men of Scotland were wasted in sarcasm and invective. The only redeeming feature of the situation was that the rival effusions of the two chief contestants were embellished by wit and fancy.

The dispute so got on the nerves of Charles Bell, who naturally as the brother of the leader of the young party became involved in the controversy and in the prejudices inseparable in so restricted a society as that of Edinburgh, from the rancorous system of professional partizanship, that he left Edinburgh for the wider field of London. His idea was to lecture on anatomy and surgery. The task he had set himself was difficult. At that time the lecture rooms of London were occupied by anatomists of the first rank, among whom were Cline, Astley Cooper and Abernethy. But Bell had full confidence in his knowledge and qualities as a lecturer and was not discouraged. This confidence was justified by the results and from the outset of his London career he took his place on a footing of complete professional independence and equality.

At this time he associated himself with Mr. Wilson, F.R.S., in the school of anatomy in Great Windmill Street, rendered famous by John and William Hunter. Bell upheld the great traditions of the school. His mode of lecturing was adapted admirably to engage and keep the attention of pupils. His style of lecturing, when he had ceased to demonstrate from the subject before him, partook more of the nature of animated and close reasoning, delivered by a person intent on carrying conviction to the minds of his hearers, than of those uninteresting details of minute facts, which too often rendered lectures on anatomy vapid and tiresome to the student.

Bell's lectures were of the highest grade resembling those discourses which he afterwards delivered in the College of Surgeons of London. In the year 1812 Bell's reputation was established so firmly in London that he was elected a surgeon to the Middlesex Hospital by an open poll. In this hospital he delivered clinical lectures. Bell had long been anxious to study the surgery of gunshot wounds. The first occasion upon which he was enabled to gratify this desire was in the year 1809, immediately after the battle of Corunna, when the wounded hurried home in transports were landed on the southern coasts of England, little having been done to them in the meantime. An opportunity was thus presented of becoming acquainted with the peculiarities of wounds received in battle such as rarely had occurred to a surgeon unconnected with the military service. In order to do this Bell had to relinguish his London engagements. As a result of knowledge thus acquired he published an *Essay on Gunshot Wounds,* which he added as an appendix to his *System of Operative Surgery.*



SIR CHARLES BELL

The second occasion on which Bell took advantage of a similar opportunity was after the battle of Waterloo. He and his brother in law, Mr. John Shaw, were the first surgeons from England who arrived in Brussels. This journey was undertaken mainly for the purpose of obtaining cases and sketches to illustrate further the subject of gunshot wounds but on finding himself surrounded with so much suffering he offered his services wherever they might be most needed. At that time, and after such a battle, the ordinary supply of skilled aid was necessarily inadequate and his offer was accepted gladly. He was at once placed in charge of a hospital, and, for three successive days and nights, was engaged incessantly in dressing wounds and operating on the injured. He gave surgical aid to three hundred men and the drawings with which he was enabled to enrich his collection have been referred to as the finest specimens of water colors in the English anatomical school. It has been suggested that to this expedition we owe, perhaps, the volume in which Sir Walter Scott depicts the same scenes, as Lockhart in his *Life of Scott* states that a letter written by Mr. Charles Bell to his brother John laboring under the excitement of the scenes at Brussels made so deep an impression on Scott that "When I read it," he said, "it set me on fire," he immediately departed for Brussels and the book which appeared afterwards under the title of *Paul's Letters to his Kinsfolk* was the result.

In 1812 Bell became a member of the English College. A few years after he was appointed professor of anatomy and surgery at the College of Surgeons and then a member of the Council. He was an especially felicitous and able lecturer.

The Earl of Bridgewater, one of the most remarkable men of his generation, famed alike for his scientific attainments, for his lavish outpouring of money, with which he was more than plenteously endowed, for scientific and utilitarian purposes and for his eccentricities, left a sum of 8,000 pounds in trust to the president of the Royal Society of London with the object of rewarding the author of a dissertation on the power, wisdom and goodness of God as manifested in the works of his creation. The president shrank from the responsibility of choosing a person best suited to fulfill the terms of the bequest. He therefore took counsel with the Archbishop of Canterbury and the Bishop of London and together they determined to divide the sum left at their disposal among the writers of eight essays, illustrative of the subject proposed. In his will the Earl of Bridgewater had expressed a desire that the power and construction of the human hand should be embraced in the dissertation and when Bell learned that he had been selected as one of the essayists, chose that as the subject of his essay. The essay was not only the best contribution on the hand ever made but bore directly upon and fell in with the purpose of the testator.

The School of Great Windmill Street, over which Bell presided and in which school such men as William and John Hunter, Baillie, Cruickshank, Thomas Wilson and Brodie had taught, had come to be regarded as the portal of entrance to surgical distinction in the West of London, passed out of existence. This was owing to the establishment of the University of London, within ten minutes' walk from Windmill Street, and to the fact that the Middlesex Hospital was situated not far away. As somewhat of a compensation for the large pecuniary loss suffered by Bell through the closing of his school and as a reward for his conspicuous abilities, the governors of the University of London placed him at the head of their new medical school.

In the year 1836, at which period Bell's reputation, chiefly in consequence of his discoveries connected with the nervous system, had become international, he was invited to the chair of surgery in the University of Edinburgh. He continued his work in his native city with as great success as in London.

Bell was an able writer. His first publication was *A System of Dissections.* Then followed *A System of Anatomy* by John and Charles Bell. He was an accomplished draughtsman and painter and illustrated the preceding work with *Engravings of the Arteries.* This was followed by *Engravings of the Brain* and by *Engravings of the Nerves.* He also published *Essays on the Anatomy of Expression in Painting,* in which he pointed out the importance of a knowledge of anatomy to the artist. In 1811 he printed for distribution among his friends a small essay en-

titled *Idea of a New Anatomy of the Brain.* In 1813 he published a volume of *Engravings from Specimens of Morbid Parts.* In 1816 he commenced the publication of *Surgical Observations,* and in 1819 an *Essay on the Forces Which Circulate the Blood.* In 1820 *A Treatise on the Diseases of the Urethra, Vesica Urinaria, Prostate and Rectum* was published. His most important contributions to scientific medical and surgical literature were those on the nerves concerning which he made some important discoveries.

The Middlesex Hospital in the time of Bell was the refuge, as it is now, of large numbers of persons suffering from malignant disease, and he wrote an article in the *Medico-Chirurgical Transactions* (Vol. 12, p. 213) "On the Varieties of Diseases Comprehended Under the Name of Carcinoma Mammæ." This article, in view of the great interest now taken in diseases of this character, may be referred to. As said before the cancer ward of the Middlesex Hospital afforded to Bell great facilities for observing this disease. Its intractable nature, the number of unsuccessful operations for its relief, and the natural dread entertained of the knife, especially when it was considered that there were no anesthetics, tended much to throw these cases into the hands of empirics, who without a knowledge of pathology and destitute of principle but guided solely by avarice, took every advantage of suffering humanity and held out to the ignorant the possibility, nay the certainty of a cure without resort to operation. Bell states that "by much the larger portion of patients received into the cancer ward of the Middlesex Hospital have spent their last penny; and, what is worse, they have lost that precious time in which they might have been cured in attendance on a set of the most unfeeling wretches, that ever disgraced a country." Bell gives a history of carcinoma, he describes other malignant diseases, different in certain respects from true carcinoma, but of the same nature. He then considers the character and changes of the more common form of the disease, he gives instances of the mistakes liable to be made in treatment and by marking particularly the changes to which it is subject he points out the deceits that are practised on public credulity. This article on cancer written by one of the keenest clinical observers who ever lived and who possessed an unrivalled knowledge of anatomy, surgery and physiology should be read by those who have had experience with malignant disease at the present time. It will be found probably that clinical knowledge of cancer, as expressed by Bell in 1820 or thereabouts, was much the same as nowadays. He recognized the fact that surgery was the only possible means of cure or of lengthening the term of life. Authorities now say much the same thing.

Bell had a profound influence on the surgery of his time and over and above that was an original thinker. His discoveries with regard to the nervous system alone entitle him to a high place among the contributors to medical science.

He died at Hallow Park near Worcester on Thursday, April 28, 1842, in his sixty-eighth year. His epitaph, written by Lord Jeffrey, reads as follows: "Sacred to the memory of Sir Charles Bell, who, after unfolding with unrivalled sagacity, patience and success, the wonderful structure of our mortal bodies, esteemed lightly of his greatest discoveries, except only as they tended to impress himself and others with a deeper sense of the infinite wisdom and ineffable goodness of the Almighty Creator."

The Viper in Therapeutics.—*L'Echo Médicale des Cevennes* publishes an interesting article by H. M. Noël on the viper in ancient therapeutics. We quote a few paragraphs: "The flesh of the viper, eaten fresh, roasted on the grille, was used as an infusion in wine, in syrup, in jellies, and in soups, or as a powder after desiccation. The head dried and hung around the neck of infants was supposed to prevent convulsions. According to other authors, the head wrapped in linen and hung around the neck was an excellent remedy for quinsy. Ashes of viper skin cured scurvy if the patient was frequently rubbed with it. The ashes of a whole live viper, placed in an earthenware pot with two ounces of fennel juice and a grain of incense, covered and well packed in clay and put in the oven to bake, were most efficacious in preventing cataracts and 'obfuscation' of the eyes, whether applied directly or in the form of eyesalves. Galen claims—and Dioscorides rightly ridicules him—that the flesh of vipers ingested produces pedicular disease; meanwhile he himself writes that the Egyptians were accustomed to eat vipers and other serpents just as they did eels.

"Cardan lays claim also to having cured ulcers of the lungs with the same drug, of which he slightly changed the formula. But it was especially for affections of the skin that its use prevailed throughout many ages. It was employed in Egypt, Greece, Rome for elephantiasis. Jean de Vigo, surgeon to Pope Julius II, mixed it with mercury, and it reappeared in the composition of the famous salve which bears its name. Of this salve the oil of vipers mixed with that of toads and earthworms, cooked alive, was the basis. At the time when syphilis had just made its appearance in Italy and the epidemic was at its height, Vigo considered it a skin disease and treated it as such. The use then made of mercury was only a survival of the theories of the alchemists. Van Helmont, who was a fervent disciple of the alchemists, brought into vogue medicaments produced by chemical action, which did not prevent him from applying the most bizarre remedies. This explains his account of his having cured a peasant afflicted with dropsy by having him wear a girdle of vipers.

"Ancient therapeutics thus derived many remedies from vipers, such as ointment, volatile salts, wine and bouillon of vipers, which were considered tonics and bracers. The body of the reptile, after having been dried and pulverized, was infused in the wine and used also as a sovereign remedy for bloating or flatulence in animals. The oil served as a panacea for sprains and bruises; old coquettes anointed their faces with it to restore youth."—*Translated from Aesculape.*

Editorial Articles

HEALTH AND HEREDITY

We seem particularly prone these days to overlook heredity as a factor for health. Perhaps it is well not to make too much of it lest we become unduly fatalistic as to what may be done for the race, and heaven knows we have, in past time, been sufficiently of this mind in this matter.

We are not to mistake, however, the point as to where heredity begins and blame things on our ancestors which do not belong to them. Effects of intrauterine conditions, of misfeeding of the mother and malnourishment of the child, are not hereditary faults, though both parents may be somewhat to blame for the results. Certainly family traits preceding conception must be considered and the germ plasm may be modified up to this comparatively recent date.

Health is the condition of bodily perfection of structure and activity resultant from the influence of environmental conditions upon the product of conception. These conditions are most varied and powerful, yet we do not know how far they affect the new assortment of living matter. Certainly after the first few months heredity is strongly assertive, and we can assuredly say that "health is a markedly hereditary characteristic."

If physiologically we are as unchanging as we are anatomically, health, aside from effects of accidents (including infections), changes but slightly, for our features, whether of face or of form, change very little indeed; the mole or the nevus remain where and as they were, one eye continues to be higher than the other and one foot longer than the other until we are done with feet and eyes, nevus and mole.

Just how far we can combat hereditary tendencies to disease or just how much we ought to attempt to do so no one knows.

Hereditary physical and mental traits on which health depend are no doubt the result of habits of individuals stretching back through generations of them, and we can only infer that by attempts at modification of habits in individuals of this generation we may possibly modify its germ plasm for the better.

As a rule, however, we do not have the possessors of this plasm coming to us for conditions of evident hereditary origin until after the time for producing a new generation. Our chief hope of such modification would seem to rest, then, in trying to improve the health habits and the health information of young people, in the belief that it may influence their later health and the health of the future generation in some small degree.

Heredity undoubtedly more than aught else limits the length of life of the individual. There is ample evidence of this. Human life, on the whole, is being lengthened, but this is chiefly true of humanity in mass, in the longer survival of the young rather than in a lengthening of the older lives. Strange, that in that minute mass of mysterious matter from which we grow the number of our days is already roughly recorded.

THE LEAD TREATMENT OF MALIGNANT NEOPLASMS

The lead treatment of cancer during the comparatively short time during which it has been before the public has been discussed more fully than any other treatment of the disease previously. Opinions on the method have varied considerably and therefore its further discussion at the recent meeting of the British Medical Association at Nottingham helps to elucidate a somewhat vexed problem.

Dr. J. G. Adami, of Liverpool, read a paper by Dr. Blair Bell, the originator of lead treatment of malignant growths, who was prevented from attending by illness, in which it was pointed out that it was more essential to discover the nature of the cancerous process itself, the character of the change from normal growth to cancerous development, than to discover the socalled causes which were really predisposing factors. There were many extrinsic and intrinsic factors which could produce the precancerous condition.

These included radiation of various kinds, heat, trauma, infection, toxemias, and senescence, all of which reduced the vitality of the cell. It seemed probable that the metabolic disturbance leading to the change might be oxygen starvation. The ancestral type to which the cell sought to return in the reversionary process was that of the chorionic epithelium, which had the power to invade and erode bloodvessels in its search for nutriment. It might be expected that cells of the chorionic epithelium would resemble malignant cells in structure, function, and chemical composition, and in toxicological affinities.

The investigation of this working hypothesis undertaken at Liverpool had presented a formidable array of problems. In seeking for a therapeutic agent lead was chosen because of its action on chori-

onic epithelium, but to have found that chorionic epithelium and cancer cells were similar in nature and that lead was specifically toxic to both, was not enough. The results must be improved and rendered consistent, and patients must be protected against the harmful effects of lead poisoning.

Dr. Francis Carter Wood, of the Crocker Institute for Cancer Research, Columbia University, took part in the discussion and described the results of his investigations into the changes produced by lead in large transplantable tumors of rats. He concluded that the first effect of the lead was a thrombosis. The surrounding tissues then underwent change, owing to the toxic action of the lead upon them. The tumors were not cured in all cases, but these tumors in the rat were more malignant than in man. Lead did not exert toxic influence on them, and cures had occurred.

A valuable contribution to the discussion was by Prof. G. G. Glynn, of Liverpool, in which he told with as great accuracy as is possible at present the existing situation as regards lead treatment of malignant neoplasms. He said that the following conclusions had so far been reached by Blair Bell and his coworkers: There was histological evidence that lead had damaged a very small percentage of the malignant neoplasms examined from patients. It could not be expected that a large percentage would show damage because only a comparatively small number of patients were clinically benefited by the lead. There was a greater tendency to necrosis, and sometimes to a slowing in the rate of growth, so that the malignant cells had time to become more specialized; thus keratinization and the formation of cell nests and goblet cells appeared to be more common.

There was no damage to malignant growths, which was histologically pathognomonic of lead. It most probably acted by increasing the regressive changes which normally occurred to a greater or less extent in all malignant neoplasms. The tendency to thrombosis in carcinoma was no greater; thrombosis in sarcoma might be more common, but it was probably secondary. The absence, however, of any characteristic changes was not proof that lead had no action. If an investigation was made into the effects of arsenic or mercury on chancres or gummata, nothing histologically pathognomonic of these remedies would be found. The effect of lead upon a similar malignant growth varied greatly, even when it was administered under apparently the same conditions. This suggested that the patients' tissues of resistance, using the term in its widest sense, probably played a part in determining the success or failure of treatment, as they did in malaria treated with quinine and in syphilis treated with mercury.

Dr. L. Cunningham, of Liverpool, also emphasized the point that in treating cancer with lead one of the greatest difficulties had been the selection of cases which presented a reasonable chance of being benefited and could at the same time withstand the toxic effects of the drug.

The outcome of investigations undertaken and the results of treatment so far seem to warrant the statement that, to a great extent, lead treatment is still in the experimental stage. The remedy in itself is dangerous and the greatest care must be taken in the selection of patients. In inoperable cases it appears that the treatment is worth the risks attending it as the lead has certainly an action on malignant growths whether it be toxic or tending to regressive changes. It is to be hoped that continued investigations will clear up some of the obscure features with regard to malignant neoplasms and that means may be found of rendering the administration of lead less dangerous and to some extent of standardizing the dose. In the treatment of cancer, as in all diseases, the personal equation plays a great part. The truth of this statement is being emphasized every day.

However, as Bell insists, it is more important to discover the nature of the cancerous process than to discover the causes. Successful treatment is more likely to follow the discovery of the nature of the disease than to follow the discovery of the causes and it is successful treatment, preventive or remedial, that should be the object of all disease investigations.

SOLVING THE DENTAL PROBLEM

"Twenty-five per cent. of the teeth of eighty-five per cent. of children become decayed during school days." There are twenty-five million children of this age. With but one tooth per child filled each year at the rate per tooth which seems prevalent among tooth tinkers these days, we have an annual outlay of some one hundred million dollars, which sum, in a way, is pure waste of good cash, just as the sum paid for replacing bad bricks in a wall is a waste. The latter is occasioned by carelessness, cupidity or ignorance of the brickmaker, but the former only by the ignorance of the toothmaker.

But this is but a drop in the dental bucket, for there are not enough dentists to do all that ought to be done for adults, and it is estimated that there are not more than five per cent. for all work for all ages.

Of course the real way out of this masticatory mess is by the way we got into it, namely, by a return to a good toothmaking diet, nor does this mean that we must go back to the raw foods of our simian forefathers. There seems hope that the nutri-

tionists will help us out in this matter without resort to an animal menu. We would be a considerable day's journey on the way if our present knowledge could be put into practice in the hygiene of the expectant mother and infant. The teeth of animals could be promptly spoiled in the making by upsetting their dietary, and there is no reason why a right setting of the human dietary may not do the reverse.

Leaving the matter of nutrition to the nutritionists, on the result of whose studies we look with the greatest expectation, the workers in the Forsyth Dental Clinic seem to have solved the problem of dental prophylaxis after the teeth are made. They have done so by discovering that the developmental defects in the enamel of the teeth can be detected on eruption and if patched immediately these teeth are practically good for life. The first of the second teeth—the sixth year molars—for some reason (doubtless because they are finished at a time when the resources for nutrition are most meagre) are by far the most defective and otherwise troublesome, and if these can be preserved the other permanent teeth can be readily managed, especially if examined on eruption and any defects made good.

The clinic has been carrying on this experiment in prophylaxis for ten years and has reduced the loss of teeth by extraction from one in every three teeth to one in every two hundred, "the one in every two hundred being from the mouth of a child from some outlying town or district where early attention had not been definitely given."

What Dr. Cross has to say on the subject seems too good to be true.

"In a recent check up of the school children in the Boston public schools, more than ninety per cent. of one thousand children in the ninth grade had four good sixth year molars with vital pulps and nothing but small fillings in organic defects (pits and fissures). If results of this kind can be obtained in a large group of children starting indiscriminately in the first, second and third grades, we may expect a much better showing in any group in which all could be started definitely before their seventh year of age. Teeth treated in this way, unless some serious nutritional condition appears, will last these children during their whole lifetime. It may be necessary to replace some of the fillings, depending upon the thoroughness with which they were originally done, but otherwise the teeth will be serviceable. Teeth in this condition never reach the stage where there are serious complications arising from them, such as the necessity for large fillings and pulp cavities, inlays, devitalizing of the pulp of the tooth and the consequent root canal treatment, with a possible abscess and the focal infection which so frequently results therefrom.

"We should realize that practically all of the conditions and the diseases said to have their origin in the teeth occur in these teeth or from these teeth after the teeth themselves have passed a certain point of soundness. So all the systemic conditions —endocarditis, arthritis, rheumatism and others, so far as the teeth are concerned—can be entirely prevented by this early attention or dental hygiene.

"Treatment at the right age is really the key to success and results in the avoidance of subsequent complications. It is upon this one simple feature that practically all satisfactory results in dental hygiene have been obtained at the Forsyth Dental Infirmary.

"While this early treatment produces such remarkable results, it is not real dental hygiene, for there is something back of these organic defects—the systemic condition causing the defect. This of course is a nutritional factor and is distinctly a medical one. When more is understood about calcium metabolism and fixation, so that some procedure can be carried out to insure the development of the teeth free from organic defects and with perfectly formed enamel and dentine, and the manner of maintaining this good structure is known, we shall then have the actual condition, now artificially attempted, of real dental hygiene."

THE RELIGION OF HEALTH

Health and religion have always been linked. Their relationship, however, has depended on what was meant by religion. The less health they possess, the more religious many people become. Some great saints, like Francis of Assisi, were made so by sickness. A few have been driven by suffering to "curse God and die," but in bodily extremity the most of us cultivate His good opinion most sedulously and even call for prayers in our bodily behalf by those who are supposed to have special influence with the ruler of the universe.

So long as the cause of ill health, and particularly of wholesale sickness in epidemic form, was altogether a mystery which seemed connected with the resentment of the deity (over conduct having nothing to do with him), it was but natural that the chastisement bestowed should be received with resignation and that the deity should seem to have no pleasure in human bodily well being or beauty.

Perceiving the relationship between ill health and religiosity, it became the teaching and practice of the professionally and profoundly religious of more than one faith that the abuse of the body was a means of obtaining a state of grace and of paving our path to paradise.

In ascetic theory and practice, therefore, religion

and health were related more antithetically than sympathetically. High ideals of religious living were far from carrying with them high ideals of bodily perfection, and, since the Christian conscience is still strongly linked with the former, it must be taken into account in all of our health work, private and public, that we are dealing with something for which, by the standards of morality, still dominant, there is no high incentive.

Only a generation ago the president of a leading American university, a minister of the Congregational Church, declared it a sin to look upon the human body with an eye to enjoyment of its beauty or with the intent of improving its defects. If such was the view at the top, then what is to be expected as yet at the bottom of the religious heap? We are making progress religionwise, however, throughout the whole mass of humanity. We no longer sing about wanting to be an angel, which no really sane person ever did wish, though his conduct in the matter of hygiene was often consistent enough. We are not so much intent on escaping hell fire and getting to heaven as on making the most of this present existence.

There is even a tendency in the church to put health first, or at least to correlate it with religion. George Porter, S. J., in one of his letters to a troubled communicant remarks: "As for evil thoughts I have so uniformly remarked in your case that they are dependent upon your state of health that I say without hesitation, begin a course of vichy at Carlsbad." To another he writes: "Better far to eat meat on Good Friday than to live in war with everyone about us. . . . Much of your present spiritual suffering comes, I fear, from past recklessness in the matter of health." This from an archbishop in the twentieth century is the reverse of the attitude of the medieval monk and of the ideas of most nineteenth century preachers of the gospel.

In 1915 Francis Thompson published a little book, *Health and Holiness,* with an introduction by a churchman, in which we read, "Health, I have well nigh said, is Holiness. What if Holiness is Health? Two sides of one truth. In their coordination and embrace resides the rounded answer. It is the embrace of body and spirit, seen and unseen, toward which mortality, sagging put pertinacious, unalterably tends."

If this is the teaching in what has been considered, but which in many ways is not, the most conservative of religious bodies, there is high hope for improvement in the physical aspect of the human race; for only those with high ideals attain to anything in this world, and if religion and health are looked upon as related and the moral practice of one merges into that of the other, the search for the kingdom of heaven and the cultivation of health become identical.

The religion of asceticism laid down certain laws in regard to conduct, the fulfilment, or the nonbreakage, of which made for righteousness and escape from future punishment. Just what was to be done or not done for the attainment of a state of grace aside from the belief in the tenets of the church and attendance on its services has not always been clear, but the care and improvement of the person or of the race has not figured in this moral code. With the development of the religion of health, conduct conducive to health becomes incorporated as the basis of morality in practice of the holy life as well as in the theory of holiness.

Obituary.

DR. J. F. HALL-EDWARDS

Birmingham, England

Another name has been added to the toll of victims of the x ray. Almost all the early workers in x rays suffered severe injuries, many of them suffering mutilation by severe operations for the relief of the pain or malignant ulceration caused by x ray burns.

Dr. John Francis Hall-Edwards, who died on August 16, 1926, near Birmingham, was one of the first and foremost of these martyrs to science and was conspicuous both with regard to the extent of his injuries and for the unflinching courage with which he bore them. He was born on December 19, 1858, and received his education at King Edward's School, Birmingham, and at Queen's College, Birmingham. He obtained the license of the College of Physicians of Edinburgh in 1885 and settled in practice at Moseley near Birmingham.

He was an enthusiastic photographer so that the discovery of the x rays found him prepared to study them with the interest of more than an amateur. In 1899 he was acting as surgeon radiographer to the General and Orthopedic Hospitals in Birmingham. In the South African War he served as surgical expert in x ray work to the Imperial Yeomanry Hospitals at Deelfontein and Pretoria. From this time onward he suffered severely from x ray burns, so much so indeed that after six years of constant pain he had his left arm and the greater part of his right hand amputated. In spite of these disabilities he received a commission as temporary major in the R. A. M. C. on the outbreak of war in 1914 and was appointed consulting radiographer to the First Southern and other military hospitals in the neighborhood of Birmingham. At the end of the war he continued to practise as a radiologist. He also acted as editor of the *Archives of the Röntgen Society* and president of the British Electrotherapeutic Society and was an honorary member or Fellow of various scientific societies, American and British. In January, 1922, he received the Carnegie Hero Trust medallion, with an annuity of $500. He published several books on radiography.

Group of American Physicians in front of Hotel Bristol, Oslo

A Study Tour of Europe in 1926

RICHARD KOVACS, M.D.

New York

The Travel Study Club of American Physicians, organized at the Seventeenth International Congress of Medicine, London, 1913, started on its second European Study Trip on June 12, 1926, when twenty-nine participants sailed from New York on the S. S. *Stavangerfjord* of the Norwegian American Line. The eight days of ocean travel were a pleasant means of relaxation after the rush to tear oneself away from the too well accustomed duties of medical practice and served as an opportunity for the members of the study tour to become well acquainted. Participants hailed from as far as Florida, California, Arkansas, and Minnesota. Dr. Fred H. Albee, of New York, acted as president, Dr. Louis Livingston Seaman, as president emeritus, and Dr. Richard Kovacs as secretary. There were six women physicians among the participants. Daily evening meetings of the study tour were held in a special sitting room, the program of the tour discussed, and informal addresses listened to.

The landing in picturesque Bergen, at the same altitude as Southern Greenland, occurred on the longest day of the year, with the midnight sun shining brightly a few degrees farther north. There was practically no darkness at night, and small print was readable under the bright sky almost up to midnight. For this reason, here and in Oslo, our next station, no street lights are lit from the middle of June until the end of July. The railroad trip to Oslo, the capital of Norway (with its name recently changed from Christiania), along wonderful fjords and over snow covered high mountain ranges, is one of the scenic routes of the world.

NORWAY

Oslo, with a population of about 250,000, is situated along the waters of Oslofjord and surrounded by hills presenting fine vistas. Two days were spent visiting medical institutions. The Ullevaal Sykehus (city hospital) and Baerum Hospital (county) are both situated on lovely grounds and especially the latter offers a wonderful view over the waterfront and wooded hills. They were built at the time of the war boom when, besides the resident population, a great many interned soldiers of the warring nations had to be cared for. Representing the best type of hospital construction, they were very expensive to build and are still more expensive to maintain, much to the regret of the taxpayers, for here, as elsewhere in Europe, most hospitals are maintained by the community at large and their medical personnel are fully salaried city or state employees. The medical men, on the other hand, complain that taxes take away an unreasonably large part of their salaries, the collapse

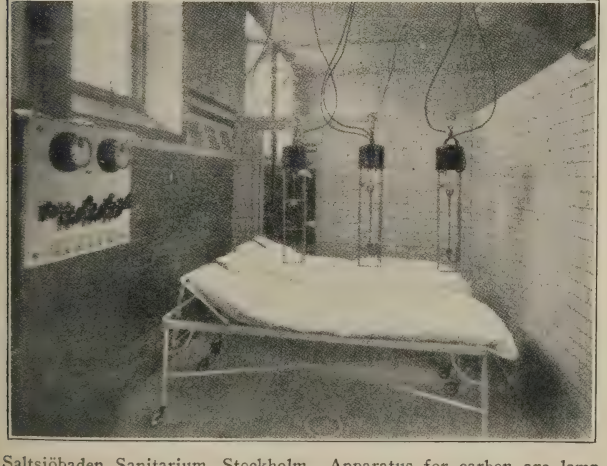
City Hospital, Oslo

of the wartime prosperity having left Norway with a considerable deficit. The individual patients are very well cared for, often in small wards with plenty of window space and sunshine. Besides the usual general departments, we noticed in each hospital a finely equipped institute for physical therapy, usually attached to the medical division. In these we saw the extensive application of carbon arc lamps for general tonic treatments; during the winter months with only a few hours of light and farther north with almost none, a number of conditions of malnutrition, forms of tuberculosis, and neurasthenia develop, which are usually well relieved by artificial light.

The language of medical books, etc., is naturally Norwegian, but in the libraries, laboratories, we found an equal mixture of English and German textbooks. At the University Hospital (Rigshospital) which is a state institution and serves as a teaching centre for the University of Oslo, we were met at luncheon by the members of the Faculty of Medicine, all of whom speak excellent English, like all other well educated Scandinavians.

SWEDEN

A night's ride took us to beautiful Stockholm, justly called the Venice of the North. There is a rich variety of imposing buildings, fine scenery, and hustling life along the edge of its numerous waterways. Its medical institutes are abundant and of high



Saltsjöbaden Sanitarium, Stockholm. Apparatus for carbon arc lamp treatment

rating, with a splendid type of workers therein. The ancient Serafimerlasarattett (Royal Hospital of the Seraphim) is a state hospital founded in 1739, housing about 450 patients. A medical clinic was held by Jakobaeus on his original work in thoracoscopy, and a surgical clinic by Docent Olivecron (brain tumor operation). Professor G. Forssell demonstrated the x ray institute. The hospital serves as a teaching centre for the Karolinska Institute, the medical school of Stockholm, which is situated opposite. Later Dr. Westergren demonstrated his sedimentation reaction of red corpuscles, which in comparison with the temperature curve is of considerable diagnostic and prognostic value in tuberculosis and polyarthritis. There are two quite modern municipal hospitals, the Sabbatsberg Sjukhus, where Docent Josefson made medical rounds, and Dr. Hybbinette, the world famous "singing" surgeon, operated. Dr. Hybbinette's operating skill is, however, at least equal to his Carusolike high baritone. He does not sing at the time of operations, as reported, but entertained

Bispebjerg Hospital, Copenhagen. Main concourse between pavilions

us during and after the dinner given by our Swedish colleagues. The Maria Sjukhus is another fine new municipal hospital, and there Professor Key, the dean of Swedish surgeons, operated. In the Centrallasarett Chief Surgeon Giertz made rounds and operated. In all of these institutions we were impressed by the complete teamwork between the various departments and the efficiency of service from every standpoint.

Among the many special institutes, we saw the radium hemmet (radium home), a model institute for cancer therapy, under the leadership of the internationally known x ray man and editor, Professor Forssell. According to the operability of the case, deep x ray therapy, electrocoagulation and radium are used. A very excellent followup system is in vogue; the state pays for the journeys of the poor patients and the municipalities for the cost of treatment of their own patients. Due to the cooperation of physicians from all over the country, cases are now received much earlier and the results are consequently growing still better. The *Lillahemmet* is a home for hereditary syphilitic children, founded in 1901, and in spite of the newer antisyphilitic remedies, we found still a goodly number of little inmates. There are quite a number of fine children's hospitals.

like the Sachska Barnsjukhuset (Sach's children hospital), the Allmanna Barnhuset (public children's hospital), etc. In the St. Goeans Hospital there is a model department for tuberculosis of bones and joints.

An institute of great interest is the Vin and Spiritcentralen, which is the headquarters for a semistate company for the Stockholm system of alcohol control and distribution. Any citizen provided with a passbook issued after due investigation is allowed to buy a limited amount of spirituous drinks, of any kind, but not more than four litres (quarts) per month, with due allowance for special occasions. With private pecuniary interests removed, and a strict control over manufacture and stocks, this system now in vogue for about ten years has rapidly decreased drunkenness and alcoholism. There is practically no illicit trade, because the law abiding citizen is not deprived of the use of alcohol, once he got over the necessity of getting his passbook, and public opinion definitely supports this system. A glass of champagne from the abundant stocks was tendered to the investigating Americans by the goodnatured State Secretary.

The leaders of the Swedish medical profession returned from their midsummer vacation to attend a subscription dinner given to us in the beautiful building of the Swedish Medical Society. Professor Jakobaeus presided, and many words of goodwill and admiration for America were heard. On Sunday, Professor Key took our surgeons for a yachting excursion over the beautiful waters of the archipelago coast of Stockholm, while the rest of the party sailed to Saltsjöbaden, the picturesque seaside resort. We saw the model physical therapeutic establishment of Dr. Aberg there, and were his guests for dinner. Afterwards several of our members took a hydroplane ride over the beautiful waters of the Archipelago and the Baltic Sea. The four days' visit to Stockholm left unforgettable memories with all of us.

PROFESSOR G. FORSSELL
in yard of *Radiumhemmet*, Stockholm

DENMARK

Two days were spent in the historical capital of Denmark, Copenhagen. The approach by train ferry across the Oresund from Malmo presents the city picturesquely. The enormous bicycle traffic on its streets is unique. The two principal hospitals visited were the magnificent Rigshospitalet (University hospital), a state institute, and the Bispebjerg Hospital of the City of Copenhagen. The former provides for the training of doctors, midwives and nurses. Each of the seven general departments has its own amphitheatres, laboratories, libraries and collections for the use of students, all buildings being connected by a corridor. The total bed capacity is 974. Professor Knud Faber, the internist of repute, was our guide, and presided at a luncheon given by the hospital. Our president, Dr. Fred H. Albee, gave a talk on his work in bone grafting, illustrated by moving pictures, before the Danish Society of Surgeons, in the surgical amphitheatre, which was packed to capacity with an appreciative audience. The Bispebjerg Hospital is a very large modern institution, built in garden pavilion style with underground corridor connection. In both hospitals the entire staff, including attendants, live on the grounds in fine separate buildings and devote their entire energy to the patients and to teaching. A most complete department of physical therapy is attached to each hospital and is used extensively. The per capita cost is, as in all Scandinavian hospitals, complained of as being very high, though the cost to the individual patient is quite low.

The Finsen Institute for light therapy is the unique institute of Copenhagen. From small beginnings in 1895 it has grown to a bed capacity of 220, treating 250 patients daily. Employing concentrated carbon arc light through a water cooled quartz compressor, the results were 59.6 per cent. cures in two thousand cases of lupus between 1899 and 1914. Since the addition of general carbon arc light baths by the present chief, Axel Reyn, the percentage of cures has reached eighty-nine per cent. and also includes various forms of surgical tuberculosis (bones, joints and glands). Local treatment has also been used with good results in nontuberculous skin lesions, chronic eczema, x ray and radium dermatitis. The technic used is very exacting; the average local treatment takes about seventy minutes, the general treatment up to two and one half hours each time. The sight of the big treatment hall in which thirty patients are treated by highly skilled nurses, usually in groups of four, each group from a central lamp, is an impressive one. Dr. Svend Lom-

holt, associate director, gave a very thorough lecture on the principles and technic of treatment. We stood in reverence before the statue of Niels Finsen, who died young from heart disease, and visited his private office, left just as it was when he died in 1905. His original technic and the line of investigations outlined by him are scrupulously observed. His widow joined us at the luncheon given by the Institute.

(To be continued)

News Items.

Buffalo Has New Filtration Plant.—The city of Buffalo has recently completed the construction of a mechanical filter plant for treating its water supply, which comes from Lake Erie. The plant consists of forty filter units each having a capacity of four million gallons a day, thus providing a total capacity of 160,000,000 gallons in twenty-four hours.

Illinois Conference Changes Dates.—The Illinois Conference on Public Welfare has changed the date of its meeting from October 18th-20th to November 14th-16th, because the former dates conflicted with those of the American Prison Congress. The Illinois conference will be held at Mt. Vernon. Its general theme will be Fixing the responsibility for treating human ills.

New Members of Mental Hygiene Committee.—The following new members have recently been appointed to the Committee on Mental Hygiene of the New York State Charities Aid Association: Chellis A. Austin, William A. Chadbourne, Mrs. James Russell Parsons, Dr. Frederick W. Parsons, superintendent of the Buffalo State Hospital; Dr. John R. Ross, superintendent of the Harlem Valley State Hospital; and Dr. Clarence O. Cheney, who has been appointed superintendent of the Hudson River State Hospital.

Rockefeller Institute Appointments.—The Scientific Staff of the Rockefeller institute for Medical Research has announced the following promotions and appointments: Dr. Charles R. Stockard has been elected a member of the Board of Scientific Directors; Dr. John W. Gowen, Prof. Duncan A. MacInnes and Dr. Norman R. Stoll have been appointed associate members; Dr. Eggert Möller has been appointed associate; assistants appointed are: Mr. Lawrence R. Blinks, Dr. Philip G. Cohen, Dr. Walter P. Covell, Dr. John A. V. Davies, Dr. Lewis A. Eldridge, Jr., Dr. Jacob Furth, Dr. Donald M. Hetler, Mr. Thomas P. Hughes, Mr. Alfred G. Jacques, Dr. Lawrence S. Kubie, Dr. Eaton M. MacKay, Dr. Julius Sendroy, Mr. Henry Stevens, Dr. Fred. W. Stewart, Dr. Alphonse Walti, Dr. Rudolf W. Glaser and Dr. Philip D. McMaster have been promoted from the rank of associate to associate members; Dr. Charles A. Doan, Dr. Douglas A. Drury, Dr. James A. Hawkins, Dr. Moses Kuntz, Dr. Clara J. Lynch, Dr. Ida W. Pritchett and Dr. Lars A. Welo have been made associates.

Annual Conference Program Announced.—The Annual Conference of Health Officers and Public Health Nurses, to be held in Buffalo October 12th at the Statler Hotel, will form a part of the annual convention of the American Public Health Association. The following tentative program has been announced: 10 a.m., introductory address by Dr. Matthias Nicoll, Jr., Commissioner of Health of New York State; What New York State Is Doing for Cripples, by Lewis A. Wilson, director of the Division of Vocational and Extension Education of the New York State Department of Education; Progress of the Toxin-Antitoxin Campaign in New York State, by Dr. Edward S. Godfrey, Jr., director of the Division of Communicable Diseases of the New York State Department of Health; 2 p.m., address by Dr. George M. Fisher, president of the New York State Medical Society; Progress of Infant and Maternity Hygiene Work in New York State, by Dr. Elizabeth M. Gardiner, director of the Division of Maternity, Infancy and Child Hygiene of the New York State Department of Health; Control of Nuisances by Local Health Officers, by Charles A. Holmquist, director of the Division of Sanitation of the New York State Department of Health.

New Clinic in Philadelphia.—The Social Service Department of St. Christopher's Hospital for Children in Philadelphia has recently opened a neuropsychiatric clinic for children at that institution, according to the *Mental Hygiene Bulletin.* The clinic functions under the auspices of the hospital's Department of Preventive Medicine. All medical, surgical and laboratory work, except x ray, is carried out within the hospital.

Dusseldorf Exhibit.—Health in many aspects is being featured at the great German health exhibition at Dusseldorf. The Institute for Tropical Hygiene of Hamburg, the Museum for Hygiene of Dresden, the International Red Cross, and the Health Section of the League of Nations are among those exhibiting. One of the features of the exhibition is the *Haus des Aerztes,* the Pavilion of Physicians. The exhibit on housing and settlements stressses fire prevention organizations, watering devices, sanitation, heating and ventilation, and food and clothing. In another section, the leaders of science in Germany, colleges and academies of practical medicine, and several private clinics present the results of their work and investigations. The exhibition covers an area of nearly one hundred acres.

A New Square Club.—The Physicians' Square Club of Greater New York composed of Master Mason physicians, visited Philadelphia on Wednesday, August 18th, in order to initiate the newly organized Physicians' Square Club of Philadelphia. The initiation ceremonies were held at the Hotel Seville, at which about thirty members of the new organization were installed, by the Superior Healer of the Physicians' Square Clubs of America and the Sublime Healer of the New York Physicians' Square Club.

Addresses were delivered by a number of distinguished physicians both from New York and Philadelphia. A collation was held at the Hotel Seville after the ceremonies, at which time the date for the annual convention of Physicians' Square Clubs of America was set for the last week in September, 1926, to be held at Philadelphia, at which time a visit will be made to the Sesquicentennial Fair.

School of Tropical Medicine.—The School for Tropical Medicine established by Columbia University at Porto Rico will be formally opened on September 22nd. Dr. Robert A. Lambert will be director of the new school. Cooperating with it will be the Plague Prevention Laboratory of the Porto Rico Department of Health and the Insular Leper Hospital. Among members of the faculty will be Prof. Donald H. Cook, and Prof. William A. Hoffman, both of Columbia University; and Francesco J. Hernandez, Pedro Gutierrez Igaravidez, Isaac Gonzalez Martinez and Arturo Torregroas. Prof. Earle B. Phelps, of Columbia, will be visiting professor in the fall of 1926. Officers of administration in addition to Dr. Lambert will be Thomas E. Benner, Chancellor of the University of Porto Rico, and President Nicholas Murray Butler of Columbia University.

Civil Service Examinations.—The following openings are announced by the U. S. Civil Service Commission:

Social worker (psychiatric): applications must be on file in Washington, D. C., not later than September 21st; the examination is to fill vacancies in the Veterans' Bureau, and in positions requiring similar qualifications throughout the United States. The duties are to investigate history and environmental conditions of patients; to analyze and submit data to the physician to aid him in arriving at a definite diagnosis and in outlining a course of treatment; to consider, report upon, and treat the social environment to which a convalescent patient may go or be expected to go. Competitors will be rated on their education, training, and experience; and a thesis or publications to be submitted with the application.

Medical officers: Applications will be rated as received at Washington until December 30th; the examinations are to fill vacancies in the Indian Service, Public Health Service, Coast and Geodetic Survey, Panama Canal Service, Veterans' Bureau, and other branches. The examinations are of five grades: junior medical officer, assistant medical officer, associate medical officer, medical officer, and senior medical officer. Eligibles are needed who are qualified in general medicine and surgery. There is special need for eligibles qualified in the various specialties. Practically any specialty may be named by the applicant. Competitors will not be required to report for examination at any place, but will be rated on their education, training and experience.

Personal.—Dr. James Garfield Dwyer of New York attended the recent annual meeting of the American Laryngological, Rhinological and Otological Society held in Montreal, where he discussed the present conception of the etiology of focal infections.

Dr. Aaron Leifer has been appointed instructor in medicine at University and Bellevue Medical College, New York City.

Dr. Marks S. Shaine has been appointed instructor in Medicine in the Department of Gastroenterology at Columbia University. He has also been made consulting gastroenterologist to the Rockaway Beach Hospital.

Dr. Joseph J. Eller has returned to New York after a study of dermatological institutions in Europe.

Dr. Robert Bierich, director of the Cancer Research Institute of Hamburg, is expected to visit this country to attend the conference on cancer research to be held at Lake Mohonk, September 20th-24th. Dr. Bierich is available for lectures on cytochrome and carbohydrate metabolism in cancer.

Dr. George D. Wolf is in Europe studying the otolaryngological clinics of Germany and Austria.

Dr. Joshua E. Sweet, who for the past twenty years has occupied the chair of surgical research at the University of Pennsylvania, has been appointed head of the same department at Cornell University Medical School.

Dr. Howard Fox has been made chairman of the recently established Section on Dermatology and Syphilology of the Medical Society of the State of New York.

Dr. Albert B. Hastings, formerly associate in the Department of the Hospital of the Rockefeller Institute, has accepted an appointment of professor of physiological chemistry at the University of Chicago.

Dr. Kessiakoff and Dr. Golosmanoff of Bulgaria and Dr. Ciuca and Dr. Popp of Rumania were recent visitors at the New York State Department of Health, Albany.

Dr. Leroy W. Hubbard, for nine years orthopedic surgeon of the New York State Department of Health, has been granted four months' leave of absence to direct experimental work in the after treatment of poliomyelitis cases by exercise in warm water to be carried on at Warm Springs, Georgia.

Dr. David I. Hitchcock, formerly associate in the Division of General Physiology at the Rockefeller Institute, has been appointed associate professor of physiology and biochemistry at Bryn Mawr College.

Jane C. Allen, instructor at Teachers College, Columbia University, has resigned her position to become director of the National Organization for Public Healtth Nursing. Miss Allen received her professional education at St. Luke's Hospital, Chicago, and has done graduate study at the University of Chicago, the University of California, and Teachers' College.

Dr. Pedro N. Ortiz, Commissioner of Health of Porto Rico, delivered addresses recently in New York City, Philadelphia and Boston.

Miss Janet Grame Travell received the John Metcalfe Polk Memorial Prize of $300 as winner of the highest honors of the sixty-three graduates of the Cornell Medical School. She is the second woman to receive the prize.

The honorary degree of LL.D. was conferred upon Dr. William H. Rankin, of Brooklyn, by Queens University, Kingston, Ontario, at its annual convocation. He was graduated from the university nearly forty years ago.

Sister Mary Veronica Ryan, superior and superintendent of the Mercy Hospital, Chicago, was recently given the degree of Doctor of Laws by Loyola University in recognition of her services to the technique of surgery in operating rooms.

Dr. George A. Green of Mechanicsville has been elected Department Commander of the Veterans of Foreign Wars of New York State. Dr. Green was overseas with the Fifth Division. He has served as Department Surgeon and Deputy Inspector and last year was Senior Vice Commander.

Dr. Arthur Landsman was elected president of the medical board of the Jewish Memorial Hospital at the recent annual meeting of the board, and other officers were elected as follows: Dr. Samuel Weiss, first vice-president; Dr. Edward Bleier, second vice-president, and Dr. Louis Neuwelt, secretary.

Gifts and Bequests.—The New York Skin and Cancer Hospital received $300,000 as a contingent bequest from the estate of the late Ralph Holden.

The Memorial Home for the Blind, Worcester, and the Perkins Institution for the Blind, Watertown, Massachusetts, each received $5,000; the Home for Aged Women, the Home for Aged Men, Associated Charities, Worcester Tuberculosis Relief Association, and the Worcester Society for District Nursing, each received $2,000 by the will of the late David Hale Fanning, of Worcester.

One thousand dollars was bequeathed to the Brooklyn Home for Consumptives by the late Grace Newman.

The will of the late Mrs. Mary de Silver Lord provides $2,500 for St. John Guild's Seaside Hospital, New York, and $10,000 for St. Bartholomew's Hospital, New York.

Frederick Brown has donated one hundred thousand dollars to the Jewish Hospital of Brooklyn.

Strasbourg Courses in Cancer and Tuberculosis.—A course in cancer study and treatment is offered by the Faculty of Medicine of Strasbourg to extend from October 18th to November 26th. Dr. Gunsett, director of the anticancer centre of Strasbourg, will be in charge of the course, assisted by Professor Borrel, Professor Canuyt, Professor Leriche, Professor Masson, Professor Pautrier, Professor Schickelé, Professor Stolz, Professor Weil and Professor Vles, all of the Faculty of Medicine of Strasbourg; Professor Coulon of Lausanne, Mme. S. Laborde, director of radio and Curietherapy at the Cancer Centre, Paris; Professor Mallet and Professor Roussy of Paris, and Professor Neumann and Professor Coryn of Brussels. The Strasbourg Faculty of Medicine, in cooperation with the Association of Alsace and Lorraine against Tuberculosis, offers also a course in the study and treatment of pulmonary tuberculosis and other diseases of the respiratory organs, to extend from October 8th-23rd. Dr. G. Canuyt and Dr. E. Vaucher will be in charge of the course, assisted by Professor Cade of Lyons, Dr. Pasteur Vallery-Radot and Dr. Weill-Halle, of Paris; Professors Léon Blum, Leriche, Merklen, Rohmer, Boez, Gery, Gunsett, Belin, Woringer, Ohlmann, Schaaf, Froelich, Kaufman and Zillhardt, all of Strasbourg; Dr. Brion of Robertsau and Dr. Fath of Altenberg.

Letters to the Editor.

A EUROPEAN STUDY TOUR

New York, *August 25, 1926.*

To the Editor:

The Travel Study Club of American Physicians has just completed its second study trip to some of the medical centres of Scandinavia and western Europe, visiting Oslo (Christiania), Stockholm, Copenhagen, Hamburg, Dusseldorf, Cologne, Neuenahr, Wiesbaden, Heidelberg, Baden-Baden, Berne, Leysin, Paris and London. It is our pleasant duty to state that authorities, medical and municipal, in all of the places visited, arranged for inspection of medical and scientific institutes and for special clinics in a most thorough manner, and that leading men of the profession have shown a spirit of welcome and an amount of hospitality that we never can hope to be able to return adequately. While in comparison we can be justly proud of the recent progress in American medical teaching and research work and the interest displayed towards it abroad, there is a great deal in clinical teaching and laboratory work in some of the European centres that is unique and well worth studying. Records of our study trip are being deposited with the Committee on Medical Education of the New York Academy of Medicine, and by writing there or to the undersigned are available to any physician in the United States.

Richard Kovacs, M.D., *Secretary.*

Book Reviews

DIAGNOSIS

Differential Diagnosis. By Richard Cabot, M.D., Professor of Medicine and Professor of Social Ethics at Harvard University. Vol. II, Third Edition. Philadelphia and London: W. B. Saunders Co., 1926.

In this edition, as stated in the preface, while the cases are unchanged, the introductory discussions have been modified and enlarged.

The cases are grouped under the following headings—abdominal and other tumors, vertigo, diarrhea, dyspepsia, hematemesis, glands, melena, swelling of the face, hemoptysis, edema of the legs, frequent micturition and polyuria, fainting, hoarseness, pallor, swelling of the arm, delirium, palpitation and arrhythmia, tremor, and finally ascites and abdominal enlargement.

A feature is the listing and graphic representation in black ink of the cause of disturbances, while titles of cases, such as passive congestion of the liver and appendicitis that are "too many and too vaguely enumerable for graphic representation" are listed in red ink. In swollen face, for instance, one generally overlooks trichiniasis. It is the differentials like this that increase the value of the book.

Where necessary there are fever charts and frequent diagrams of surface markings to indicate physical signs.

The cases are presented in a concise, interesting manner, with the discussion and outcome included. In the section on tumors the echinococcus fixation test is suggested. Cabot thinks mucous colitis is a form of neurosis. (Another doctor would remark that most women over thirty-four have it.) In the chapter on dyspepsia attention is called to the fact that there are only two truly gastric causes of indigestion, namely cancer and ulcer.

The book is for those possessing a clear perspective and a rapid power of valuation. It is essentially a reference book. After perusal one realizes that it is best to think several times whether for a given case it is absolutely necessary to use surgery. The unexpected so often happens in diagnosis. In short, the volume is a masterly product, the result of long observance of cases quite baffling.

Medical Diagnosis. For the student and practitioner. By Charles Lyman Greene, M.D. Sixth Edition, revised and enlarged with 14 colored plates and 709 other illustrations. Philadelphia: P. Blakiston's Son and Co., 1926.

This volume, revised, shows the effort to increase the practical value of a most commendable book. The 1468 pages including the 159 pages of general and symptom index fused are none too many. The print is large and the margins deep enough for added comments.

Twenty pages delineate the substance which considers fundamental principles, and special problems, case taking, the blood, glands, kidneys and so on through infectious diseases, parasites, the intoxications, malingering, conditions simulating death, and a brief summary of the symptoms and treatment of acute poisoning. The marginal notations for almost every paragraph, marking the content of thought, are a great relief for quick references and as an aid to memory.

With the voluminous laboratory tests which are most worthwhile, the abundant x ray photographs, colored illustrations of retina disturbances, drawings of parasites, and pictures of typical cases, fever and other charts, there seems as if nothing had been omitted necessary for differential diagnoses.

Nowhere in a book of this sort has there been such a clear, lengthy exposition of cardiac disturbances. Approximately one fourth of the book is devoted to the subject. Electrocardiograph tracings, diagrams, x ray pictures including twenty-four röntgenograms of the behavior of the heart outline under rational treatment elevate Greene's work to the peerless class.

HAY FEVER

Hay-Fever and Asthma. A Practical Handbook for Hay Fever and Asthma Patients. By Ray M. Balyeat, A.M., M.D., Instructor in Medicine in the University of Oklahoma Medical School. With twenty-seven illustrations. Philadelphia: F. A. Davis Company, 1926. Pp. 198.

This little manual is the result of the need felt to supply a book that will explain the chief causes of asthma and hay fever and outline the routine management of patients suffering with these diseases in terms that are intelligible to the average layman. The reader is acquainted with the modern methods used in determining the causes of these conditions. As most of the cases of hay fever and many cases of asthma are traceable to the dissemination of pollens of plants, their dates of pollination are given. Another prolific cause, domestic animals, fowls and dusts, are also discussed. Finally, the methods of testing patients and the procedures employed in the preparation of therapeutic remedies are described in great detail.

Handbooks of this type serve a valuable purpose in that they penetrate the socalled mysteries of medicine and teach patients suffering from these diseases how to protect themselves against their surroundings.

UROLOGY

A Text Book of Urology. By Oswald Swinney Lowsley, A.B., M.D., F.A.C.S., and Thomas Joseph Kirwin, Ph.C., B.S., M.A., M.D. Illustrated with 233 Engravings and 13 Plates. Philadelphia and New York: Lea and Febiger, 1926.

The authors have produced an excellent volume on urology, based on eighteen years of intensive study devoted to laboratory research and clinical experience. A vast amount of useful matter has been gathered within the compass of a single volume of less than seven hundred pages. In a well written foreword, the authors emphasize the fact that for the practice of urology, whether as a specialty or merely in the course of more general practice, familiarity with many diagnostic methods and high technical skill in the use of mechanical apparatus, is a major essential.

Rather more than usual space is devoted to a consideration of the glass tests, a feature of great importance in the opinion of the present reviewer. It is difficult to understand why so many authors of urological works devote so little attention to these

highly important tests. The present authors are to be complimented on their fairly complete presentation of these tests.

In a work of such general excellence it is difficult to select anything in particular for praise. The subject is thoroughly covered and the style of presentation all that could be asked for. It was to be expected that certain phases of the subject would be emphasized, among these being the use of regional anesthesia for operative work, the authors having devoted much time and study to this subject. Here and there unimportant errors may be observed, but these can be corrected in future editions.

The authors and publishers are to be congratulated on the publication of this work. They have added another to the list of splendid works by American urologists.

MEDICAL PRACTICE

Taylor's Practice of Medicine. By E. P. Poulton, M.D. Oxon. Thirteenth Edition. Philadelphia: P. Blakiston's Son and Co., 1926.

The author calls attention to the new articles included, such as pluriglandular syndromes, melioidosis, tularæmia, chronic manganese poisoning, lipiodol injections and peroneal muscular atrophy. The three features of the book, enumerated, are the list of references and authors at the end of each section, the x ray pictures and the colored plates.

Clearly explanatory diagrams abound, such as photographs of sections of the spinal cord in various diseases. The large number of x ray pictures give students the visualizations they need for correlation of ideas. Fever charts, electrocardiogram tracings, several colored illustrations including a complete pictorial symposium, with Jenner's and Leishman's stains on normal and abnormal blood cells, enable rapid assimilation.

Brackets containing percentages follow data under discussion. The subject of treatment naturally produces a variation of opinion. For example, on page 874, bromides are given preference over luminal: in this country the reverse is favored, and not in such large doses as mentioned. However, the student's observation, textbook and clinician's instruction, indicate the elasticity permitted.

As a superior text and reference book for students this edition strongly commends itself.

RADIOTHERAPY

Ergebnisse der medizinischen Strahlenforschung (Röntgendiagnostik, Röntgen-, Radium-und Lichttherapie). Herausgegeben von H. Holfelder, Frankfurt a.M., H. Holthusen, Hamburg, O. Jüngling, Tübingen, H. Martius. Bonn a Rh. Band II. Mit 520 teils farbigen Abbildungen im Text und auf 3 photographischen Tafeln. Leipzig: Verlag von Georg Thieme, 1926. Pp. 594.

Like the first volume, this the second volume deals with the physical, biological, microscopical, anatomical, physiological and therapeutic aspects of irradiation. Heretofore these subjects were scattered throughout the literature of the world, but now they are available in one work. The various subjects are treated by experts in their various fields. Detailed discussion is impossible in a short review, but we cannot give too much praise to this beautiful and complete work.

O. Jüngling describes the diagnostic value of ventriculography and encephalography in cerebral diseases, with special consideration of brain tumors. H. Peiper discusses the diagnostic value of myelography in spinal cord diseases. The röntgenogram of interlobar pleuritis and its differential diagnosis is the work of F. Fleischner. The article on the direct röntgen symptoms of duodenal ulcer and its clinical significance by H. H. Berg is very valuable. The article by C. Kroetz on the influence of short wave rays upon the acid base balance in the body, especially on the reaction of the blood, deals with material concerning which little is as yet known. F. Klewitz contributes the article on the irradiation treatment of bronchial asthma. F. C. Geller writes about the results of experimental irradiation of the ovary. A very excellent contribution is made by K. Scheele on endovesical electrocoagulation. The röntgen and radium treatment of carcinoma of the tongue is the work of E. Schempp.

The illustrations are very numerous and leave nothing to be desired in beauty and instruction. Each monograph is followed by a bibliography which is very complete and up to date and includes the literature of the world. No radiologist should be without this valuable work.

METABOLIC AND DIGESTIVE DISTURBANCES

Sammlung zwangloser abhandlungen aus dem Gebiete der Verdauungs-und Stoffwechsel-Krankheiten. Mit Rücksicht auf allgemein-ärztliche Interessen, herausgegeben von Professor Dr. H. Strauss in Berlin. Halle a.S.: Carl Marhold Verlagsbuchhandlung, 1925.

I. Band, Heft 4. Indikationen und Technik der Entfettungskuren. Von Prof. Dr. Paul Friedrich Richter, Berlin, dirig. Arzt am Krankenhaus Friedrichshain. Zweite vermehrte und verbesserte Auflage.

III. Band, Heft 7. Die diagnostische und prognostische Bedeutung der Harnsedimente nach neueren Anschauungen. Von Dr. med. et phil. C. Posner, ao. Prof. an der Universität Berlin, Geh. Medizinalrat. Zweite neubearbeitete Auflage.

IX. Band, Heft 2. Die Enterie (enterogene Neurasthenie), ihr Wesen und ihre Behandlung. Von Dr. Paul Cohnheim, Berlin, Facharzt für Magen-u. Darmkrankheiten.

After discussing the reasons for the present day demand for the reduction of obesity, Richter divides the indications therefore into general, circulatory diseases, metabolic diseases, nervous diseases, diseases of the locomotor apparatus, and pulmonary diseases. The various types of therapeutic technic, such as dietotherapy, water drinking courses, massage and active movements, hydrotherapy and drug therapy are discussed in detail. Much attention is given to thyroid gland therapy.

After some introductory remarks upon the general value of microscopical examination of the urine and the reliability of the usual laboratory reports, Posner divides his material into two parts: the metabolic products found in the urinary sediment, such as, 1, uric acid and its salts, the urine in gout and uric acid diathesis; sodium urate and ammonium urate; 2, the phosphoric acid salts and earths, phosphaturia and calcariuria; 3, the oxalic acid earths, oxaluria, atypical crystals and their relationship to calculus formation; 4, other earths, calcium carbonate, calcium sulphate and magnesium phosphate; 5, cystin; and 6, ammoniacal combinations, ammonium magnesium phosphate.

The second part of the monograph is concerned with the products of local disturbances: 1, epithelial cells of the various parts of the urinary tract, metaplasia, and fatty and lipoid cells; 2, leucocytes, normal and pathological cells, staining, and local diagnosis by pyuria; 3, erythrocytes, localization by hematuria, and various forms of urinary bleeding; 4, nubecula, cylindroids, casts and their significance; 5, microorganisms, bacteriuria, infection, the various forms of pathogenic bacteria, amebæ, bilharzia and echinococcus; 6, admixtures from the sexual organs and accessory glands, such as the prostate, seminal vesicles and urinary filaments.

This is a comprehensive and valuable but concise résumé of the subject. He mentions the use of dark field microscopy in the study of the cellular elements, of which the English literature contains little or nothing.

Paul Cohnheim discusses enterogenous neurasthenia, its nature and its treatment. The term "enteritis" includes all those cases of a chronically diseased intestine originating with local and general reflex symptoms, essentially of a vasomotor nature. They are never a primary disease condition, but always secondary to intestinal involvement. The symptomatology includes local symptoms, symptoms in other organs, disturbances in the general condition and enterogenic psychopathies. The matter of differential diagnosis is important. The treatment includes limitation of gas formation by dietary measures, the inhibition and elimination of pathological products of fermentation, treatment of the colitis and improvement of the nervous condition.

CLINICS

The Medical Clinics of North America. Issued serially, one number every other month. Volume X, Number 1, Philadelphia Number, July, 1926. With twenty-four illustrations. Philadelphia and London: W. B. Saunders Company. Pp. 260.

The Philadelphia Number of the *Medical Clinics* features a study of bronchoscopy in disease, by Gabriel Tucker, of the Chevalier Jackson Bronchoscopic Clinic, in which a series of most unusual cases is reported. A total of twenty-one clinics is presented, the subjects covering a wide field. Strecker presents an interesting clinic on paresis *sine* syphilis, and Mohler discusses at length the significance of precordial pain. Carcinoma of the bronchus is presented in a clinic by Thomas McCrae, and the treatment of polycythemia vera with phenylhydrazin, by Simon Leopold. Twenty-three contributors make up this interesting number.

The Surgical Clinics of North America. Issued serially, one number every other month. Volume VI, Number III. Lahey Clinic Number, June, 1926. With fifty-four illustrations. Philadelphia and London: W. B. Saunders Company. Pp. 214.

Twenty-one clinics are contributed by eight members of the Lahey Clinic staff, most of the subjects being allied to the subject of goitre. Lahey emphasizes the modification of his method of treatment, which has resulted from the introduction of iodine. The management of cases of primary hyperthyroidism or exophthalmic goitre today in the clinic consists of preoperative rest and Lugol's solution, until it is evident that the most marked degree of gain has been made, as evidenced by improvement in symptoms and a drop in basal metabolic rate. Usually eight to twelve days are required for this improvement to become manifest, though there is no regularly fixed time. Of his cases thus treated, 92.8 per cent. have shown a definite drop in basal metabolic rate, while the remainder either have shown no drop or have shown an increase in basal metabolic rate. Another important result of this treatment is that there has been a markedly diminished number of multiple stage operations.

Burton Hamilton contributes an instructive clinic on the chronic cardiac as a surgical risk, and Robert Mason offers a most useful clinic in which he discusses some physiological aspects of postoperative treatment. The volume maintains the usual high standard of the *Surgical Clinics.*

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles. Edited by Henry W. Cattell, A.M., M.D., Philadelphia, with the Collaboration of Distinguished Medical Authors. Volume 1, Thirty-fifth Series, 1925. Philadelphia and New York: J. B. Lippincott Co., 1925.

This volume consists of articles presented by twenty-three contributors. Dr. Lewellys F. Barker, of Baltimore, leads with two excellent clinics. The articles are arranged under group titles, such as diagnosis and treatment, mental disturbances, surgery, toxicology and the progress of medicine by the editor. These articles are well written and presented in an interesting manner.

It is to be regretted, however, that the value of this number should be marred by two atrocious examples of rank plagiarism. Dr. Thomas M. Dorsey and Dr. Rudolph Monaco, both of Louisville, Ky., present a long article entitled Some of the Urological Problems Most Frequently Encountered in Daily Practice. This article has been plagiarized bodily, practically word for word and line for line, from an article by Dr. A. L. Wolbarst, of New York, which appeared in 1922, in the *Virginia Medical Monthly.* Another article in the same issue, under the authorship of the same Dr. Dorsey in association with Dr. F. C. Bohannan, entitled Pyuria, with Special Reference to Causation, likewise is a rank plagiarism of another article written by Dr. Wolbarst and published in the *Medical Record,* of February 12, 1922.

The editor and publishers have made a public apology for having accepted and published this plagiarized material, in the December, 1925, issue of *International Clinics.*

AYER LABORATORY BULLETIN

Bulletin of the Ayer Clinical Laboratory of the Pennsylvania Hospital. No. 9. Issued October, 1925. Philadelphia, Pa.

This issue contains seven articles, the last three dealing with postmortem blood chemical determinations, a micromethod for determining blood sugar, and a note on the preservation of hydrogen ion standards. A. E. Billings and J. R. Paul have written a most interesting and comprehensive paper on tumors of lateral aberrant thyroids. They present a résumé of cases published since 1857, totalling thirty-four cases, to which they add their own case of papillary adenocarcinoma of a lateral aberrant thyroid gland, with illustrations of the microscopic picture. The other papers deal with acute massive and partial collapse of the lungs, and pneumococcus infections.

Medicoliterary Notes.

Electrons, supposed to be the smallest things in the world, are now supplanted by even smaller particles surrounding the parts of which atoms are built up, according to the statement made in a recent lecture before the Institute of Electrical Engineers, by Sir Joseph Thomson, a leading British physicist.

* * *

In contrast to the accepted theory that hard times produce an increase in disease and a higher death rate, Dr. Huntington of Yale has been quoted as stating his belief, that, while there is more sickness and mortality during periods of business depression, hard times are always preceded by a lowering of the general health and an increasing death rate; so the panicky state of mind, according to his theory, responsible for creating a financial crisis, is in reality due to the weakening effects of ill health.

* * *

Sir Humphrey Rolleston, of the Medical Faculty of Cambridge, in a recent lecture before the Harrowgate Medical Society, gave a summary of the existing evidence pro and con tobacco using. Psychological tests show that smoking lowers mental efficiency from ten to twenty-three per cent., and it is suggested that premature senility is induced in heavy smokers by the sedative action of nicotine on the nervous system; it may also produce dilatation of the stomach. But those who chew or dip snuff need not worry, for these practices are "attended by so little absorption of nicotine as to be comparatively free from untoward symptoms."

* * *

The book publishers of America have formed a national committee to aid in the work of erecting a national press shrine to be placed in the Cathedral of St. John the Divine in New York. The shrine will take the form of a chapel opening from the side of the great nave or central aisle, and will rise 115 feet from the floor to the roof. Stained glass windows will record some of the activities of the press and its part in the progress of civilization, and somewhere in the scheme of decoration an appropriate place may be found for the names of those outstanding figures who have added lustre to the profession. The cost of erecting and equipping the chapel will be from $150,000 to $225,000. —*N. Y. Times.*

* * *

Announcement has been made through the press of a discovery, made by Dr. A. V. Blom, of Switzerland, that may lead to extremely important developments. Dr. Blom is reported to have invented a new lead paint which affords complete and permanent protection of iron from rust. Experiments made with iron objects painted with this new preparation do not show any signs of rust after prolonged exposure or even after having been heated in steam.

* * *

The National German Society for the Protection of Children has recently made public a report on employment of children in Germany. They attribute the increased employment of children on farms to poverty, labor shortage, the demand of adults for higher pay, and the influx of school graduates into industry. The report states that the average age at which these children begin to work is ten years, but that some have been found working when only four or five years of age. Working hours vary in length from two to twelve hours—two to five in winter and two to twelve during the rest of the year.

* * *

Announcement has recently been made of the discovery of a local anesthetic declared to be superior to cocaine. It has been developed through three years of experimentation by Prof. S. M. McIlvain, of the University of Wisconsin, with the assistance of a research worker, Ralph Jones. The drug consists of piperidine derivatives and is closely related in structure to cocaine, but has two and a half times the duration of anesthesia and one tenth the toxicity of the latter. Unlike novocaine, the piperidine derivatives need not be injected, but will produce surface anesthesia.

* * *

Report comes from France of the establishment in French country houses of what is known as an "American bar." These have been installed in the smoking rooms, libraries, etc., of many châteaux, with a professional white coated bar keeper behind the counter, and with high stools for the "customers." All of these are likely to be occupied at "cocktail hour," which is supposed to be another American custom.

* * *

A skin test for susceptibility to infantile paralysis has been discovered, according to reports. The discoverer is Dr. Edward C. Rosenow of the Division of Experimental Bacteriology of the Mayo Foundation. Redness of the skin at the end of eighteen to twenty-four hours at the point of injection is thought to indicate susceptibility. A serum prepared from the blood of horses immunized with the streptococcus prevents toxic reaction.

* * *

During the latter part of the school year in June, Needham, Mass., opened a "whooping cough school." So many pupils had to be absent from the public schools on account of having the disease, that the Superintendent of Schools obtained permission to open a school for whooping cough patients who had recovered sufficiently and thus prevent their failure in promotion. One group attended in the morning in a portable building adjoining the hospital, and another lot of children came in the afternoon.

* * *

The third part of Romain Rolland's new novel, *The Soul Enchanted,* of which *Annette and Sylvie,* and *Summer* have already appeared, will be published in this country in January by Henry Holt & Company under the title *Mother and Son.* It will consist of two volumes.

* * *

The U. S. Department of Agriculture has recently issued two important bulletins, one a warning against fraudulent radioactive waters and drugs, and the other the revision of the standards for milk products.

* * *

The inventiveness of school children and the renowned alibis of office boys during the baseball season must pale before the latest tale of a chorus girl's creative imagination. The stage manager of a current Shubert production the other day received a note from one of the chorus ladies reading: "Please excuse me for not attending today's matinée as I am sick in bed with a bad attack of typhoid fever. However, I will positively be around for tonight's performance."—*The New Yorker.*

* * *

That cleanliness is quite costly is shown by estimates of just how much it costs to keep clean, published in a recent issue of the *Labor Woman.* The estimate of the average cost of cleanliness per person per month is given as at least $10.95. Because the individual items are insignificant in themselves, it is difficult to realize that the sum total can be so high. An incomplete list of cleansing agents used in the average family might include the following: soap powder, floor polish, toilet soap, bath salts, laundry soap, shoe polish, shampoo powder, tooth paste, etc., to say nothing of the paraphernalia for keeping clean, such as scrubbing brushes, pans, dust cloths, and other items.

* * *

Floyd W. Parsons, economist and fuel expert, has recently been quoted as stating that in the near future a gas fired absorption refrigerating unit, by means of which a house may be cooled in summer and heated in winter, is a possible development. Heat absorbed by the plant would be pumped into the rooms during cold weather, and in warm weather, cold air produced by the refrigerating unit would be piped through the same pipes. The refrigerating capacity of the apparatus would be approximately one fourth of its heating capacity. A unit that could keep a house at 70° with an outside temperature of 10° below zero, could also, he believes, keep the house at 70° with an outside temperature of 90°.

* * *

Miss Sibyl Creed, the author of *The Shot,* a novel with a psychological outlook and which was reviewed in this journal at its time of publication some two years ago, died in Twickenham near London on August 10th. Miss Creed wrote several books and children's tales, but as she wrote them under different names, her own name is not so well known as it deserves to be. She did not pander to the popular taste. She was an artist in words and phrasing and held to her high ideals. Personally Miss Creed was most retiring and unassuming, well versed in French and English literature and possessed of keen powers of criticism.

Abstracts from Current Literature

ENDOCRINOLOGY

Hyperthyroidism Treated by X Rays.—A. E. Barclay and F. M. Fellows (*Lancet,* March 20, 1926) after studying a consecutive and unselected series of three hundred private cases, come to the conclusion that x ray treatment offers a means of restoring to a useful and moderately active life between sixty and seventy per cent. of patients incapacitated by hyperthyroidism. A further twenty or thirty per cent. will be greatly benefited in health. Cases of the somewhat rare condition of acute toxic goitre seldom come under x ray treatment owing to transport difficulties. They are usually satisfactorily treated by radium. Under both radium and x ray treatment a fulminating type of acute hyperthyroidism has been noted, and has invariably been fatal. Two out of three deaths from hyperthyroidism in this series were of this type, the patient having made satisfactory progress up to a point, and suddenly developing acute symptoms and dying within a few days. The method though slow, is, in competent hands, preeminently safe. The results are permanent, and, so far as can be judged, at least as good as those of surgery. Collaboration, not rivalry, between physician and radiologist is the ideal to be aimed at, for each can do much for the patient afflicted with this disease.

Diabetes as Sequela to Acute Pancreatitis.—Of several hundred cases of diabetes observed by J. P. S. Dunn, S. Vatcher and A. S. Woodwark (*Lancet,* March 20, 1926) two only have been directly attributable to a previous acute infection. There was evidence of the presence of gallstones in both of these cases. The authors draw attention to the significant fact that recent radiograms, taken in the manner advocated by Carman, viz., following (oral) administration of sodium tetrabromphenolphthalein, have given reason to suspect the presence of gallstones in both of the cases reported. Pancreatitis, acute and chronic, being most commonly secondary to infective processes elsewhere, in view of a tendency—more pronounced since the advent of insulin—to find the etiological basis of the individual case of diabetes in a pathological condition confined to the pancreas, the importance of an x ray examination of the entire gastrointestinal tract in every suspected case cannot be too strongly emphasized, both from the point of view of exact diagnosis and from that of treatment.

Simple Goitre.—James Berry (*Lancet,* February 6, 1926) emphasizes the following points in regard to the causation of goitre:

1. Simple endemic goitre is not a hypertrophy but essentially a degeneration of the thyroid gland. The gland is not overactive, but underactive.

2. Whatever may be the connection between iodine and the thyroid gland, there is no reason to believe that a lack of iodine has anything to do with the causation of endemic goitre, as found in the human subject.

3. It is quite certain that, at least in the majority of caases, the disease is produced through the agency of drinking water.

4. There is much evidence that practically all waters which produce goitre contain frequently, although not necessarily at all times and seasons, mineral matter in suspension, usually in an extremely fine state of subdivision.

5. There is also a good deal of evidence that this mineral matter is generally of a calcareous nature.

6. Organic mater in suspension, although capable apparently of causing a hyperplasia of the gland, at least in animals, has not been proved to be the cause of endemic goitre as seen in man.

Iodine Treatment in Hyperthyroidism.—F. Merke (*Schweizerische medizinische Wochenschrift,* January 28, 1926) states that iodine in the form of Lugol's solution in the majority of cases of hyperthyroidism acts surprisingly well in the beginning upon the nervous and gastrointestinal symptoms, as well as upon the pulse and the basal metabolism. This initial remission from iodine seems to be dependent upon the dose of the iodine only to a slight extent. Its maximum effect appears about eight days after the administration of iodine, but this favorable effect is only transient and changes into a marked aggravation after the administration of iodine has been discontinued. A short intensive course of iodine is a valuable adjunct remedy in the surgical treatment of hyperthyroidism; during the iodine remission the danger of the operation is diminished and the plan of the operation may be shortened. If a patient with hyperthyroidism has been given iodine, the amount of thyroid gland tissue should be reduced in amount within a short time; further remission may not be possible. The greater the amount of glandular tissue that remains, the more marked are recurring symptoms of exophthalmic goitre on the cessation of the iodine treatment. There are also rare cases of hyperthyroidism in which the favorable initial effect of the iodine is not observed or it may even act injuriously.

Iodine is and remains, therefore, a two edged sword for the conservative treatment of hyperthyroidism. Attempts at conservative iodine treatment should be made only under careful control, as the pulse and body weight do not give sufficient information as regards the course of the disease.

. Reaction of the Thymus After Fractures.—Study of the thymus gland during the period of healing after experimental fracture leads J. Goldner to conclude (*Archiv für Mikroskopische Anatomie,* 1925), that the several varieties of thymic cells display a true cytogenic unity in spite of their morphological diversity. All are capable of being transformed into Hassall bodies. The course of events following fracture exhibits this transformation more clearly than fasting, röntgenization of the thymus, or injection of adrenalin. The small cortical cells, despite their resemblance to lymphocytes, are distinct from them—thymocytes in fact. It seems not unlikely that under certain physiological and pathological conditions the Hassall bodies may be transformed back again into thymocytes. During the fracture period the thymus undergoes unmistakable changes. Its reaction is characterized by a rapid and complete evolution of thymic cells, by a concomitant modification of all the involutional forms, by the appearance of "meeting centres" in the vicinity of the bloodvessels. Not only the Hassall bodies, but all the cells of the gland take part in its endocrine function. The cytological picture varies at different stages of fracture consolidation. At first the evolution of thymocytes is greatly quickened, but becomes slower after the period of periosteal renewal is over. At this time, on the contrary, the formation of the other cells increases. After the fracture has healed the thymus resumes its normal aspect and structure.

Experimental Studies of Infundibular Diabetes Insipidus and Tuberian Diabetes Mellitus.—During the past twelve years Camus and Roussy have established the experimental production of transient polyuria and of permanent diabetes insipidus by lesion of the infundibulotuberian region. They find that the pituitary gland takes no part in producing the phenomenon, and that the substance of the tuber always undergoes a change when the urinary output is increased. Polyuria does not result through nervous activity alone: the infundibulotuberian lesion causes secretory changes which affect the renal secretion. J. Gournay and A. LeGrand find (*Annales de Médecine.,* December, 1925, page 424) that certain lesions of the tuber cinereum cause a glycosuria differing from that of nervous character. It is delayed and protracted. It is specific in nature, being produced only by lesions strictly confined to the paraventricular nucleus. The mechanism of its action remains as yet undetermined.

Action of Pituitary Extract Administered by the Alimentary Canal.—H. H. Knaus (*British Medical Journal,* February 6, 1926) finds that when pituitary extract is administered at any part of the alimentary canal—mouth, stomach, small intestine, rectum—pressor action is never observed. When it is introduced into the stomach or small intestine it exerts no influence on uterine muscle. When it is administered by mouth, after a latent period of about eight minutes it exerts a marked action on the uterus, increasing both the tone and automatic movements. The oxytocic substance is therefore absorbed. The rectum absorbs the oxytocic substance also, although the absorption is probably not so complete.

Fatal Diabetes in a Goitrous Patient Treated with Small Doses of Iodine and with Thyroid Extract.—C. J. Parhon and J. Nitzulesco detail (*Revue Française d'Endocrinologie,* June, 1926, vol. 4, page 189) the history of this case and quote many authors respecting the connection of diabetes with thyroid disturbance. They find evidence of a close relation betwene the thyroid gland and carbohydrate metabolism. Certain cases of goitre, they consider, show a predisposition to diabetes, and the latter disease is especially likely to supervene when treatment with iodine, with thyroid preparations, or by radiotherapy has caused hyperthyrrhemia. They admonish that a careful survey of the thyroid function should never fail to be made in diabetes and its intensity reduced, if necessary. It should also be remembered that insulin may precipitate a hypoglycemic condition of fatal tendency when the liver does not contain a reserve of glucose; and by Sänger and Elsie Hun the glycogenic reserve of the liver has been found reduced in adenomatous goitre.

Multiple Developmental Irregularities and the Endocrine Glands.—Schereschewsky studied (*Revue Française d'Endocrinologie,* June, 1926, vol. 4, page 181) a girl of twenty years prematurely born, very feeble throughout childhood, diminutive in stature, with luxuriant scalp hair but none at axillæ or pubis, suffering from constant severe headache, something of the aged in her facial expression, with a moderate panniculus, upper part of the body most developed, never having menstruated and without mammary glands. From behind each ear a prominent fold of skin extends to the shoulder, greatly widening the neck. These characteristics signify a dysfunction on the part of the anterior pituitary, combined with the manifest inactivity of the sex glands. All her life the patient has suffered from diarrhea due to achylia gastrica. The author believes this prolonged alimentary disturbance has reacted upon the functioning of the endocrine system. The condition, therefore, he considers a manifestation of pluriglandular atrophy, digestive in origin, whose evolution has been arrested in some of the endocrine glands and not in the remainder. Treatment is problematical. Radiography shows that the epiphyses of the long bones are united in the lower limbs, but not in the upper ones: it is a question whether the administration of ovarian and pituitary extracts, which is indicated on other grounds, may not cause undue elongation of the arms without increasing stature. It is probable that ovarian transplantation may be resorted to.

Kottmann's Reaction: the New Test of Thyroid Function.—This test, proposed by its originator in 1917, has been compared by G. Etienne, G. Richard, Krall, and F. Claude (*Revue Française d'Endocrinologie,* June, 1926, vol. 4, page 175) with tests in general use. A cubic centimetre of fresh serum, to which is added one fourth of a cubic centimetre of a one in two hundred solution of potassium iodide and three cubic centimetres of a one in two hundred solution of silver nitrate, is exposed for five minutes at a distance of twenty-five centimetres from a five hundred watt mazda lamp. Half a cubic centimetre is then added of a one in four hundred solution of hydroquinone and the changes of color recorded every five minutes as it turns from yellow to brown. The change is accelerated in hypothyroid subjects and retarded in hyperthyroid subjects, as compared with normal serum. Opinion is divided among those who have used the test as to its value. The authors found their modification of it to accord in only seven out of thirteen trials with the results reached by the Goetsch test, the thyroid sign, and estimation of basal metabolism.

Development and Nature of Socalled Toxic Adenomas.—A. E. Hertzler deprecates (*Endocrinology,* March-April, 1926, vol. 10, page 175) partial removal of the thyroid gland. He says: "I have been feeling goitres and sectioning goitres in this community more than thirty years. This experience convinces me that an attempt to distinguish between adolescent, the slightly toxic, and the multilobular colloids is no more sane than attempting to classify the separate weeks in typhoid fever as separate diseases. I can multiply such pictures as the following. A young girl has an enlarged gland, a perfectly innocent thing and will disappear. That the girl was nervous and had dysmenorrhea was unfortunate (thirty years ago childbirth would relieve this; twenty years ago the Beattie operation; ten years ago dilatation, curettage, the stem pessary, or the removal of a 'chronic appendix'). But the goitre was innocent. With the passing of years and the advent of pregnancy the goitre reappeared, uniform in outline, soft or elastic in consistency, otherwise innocent. Intimate acquaintances noted the patient was more irritable than formerly, but, she being possessed of a husband and children, who needs to look to the thyroid as a cause of nervousness? The goitre shows an irregularity here and there and in time becomes lobulated. It is now a lobulated colloid. Sometime between thirty-four and fifty-five the patient notices some shortness of breath, irritability, loss of weight, and perhaps more serious symptoms. But there are the children in society and the enlarging prostate, all calculated to disturb mother's rest. The symptoms increase and anorexia supervenes with rapid emaciation, and mother is buried innocent goitre and all, now these thirty years ago. We know now that the demise of the hypothetical case was caused by a toxic adenoma. But we are as ignorant as ever as to the actual cause of death. Symbolized complacent ignorance!" "The important fact is that the whole gland of the toxic adenoma is diseased. The histology indicates that it is injured beyond repair. According to present methods, we remove a part of the diseased tissue. This is unsurgical. The demands of ideal surgery dictate that the whole of the diseased tissue shall be removed. The question is, are we able at this time to meet the ideals in the surgical treatment? The result is a myxedema. This myxedema can be controlled by the use of thyroid extract. There are no more comfortable persons than those myxedemics who take their grain a day. This is better than to allow the patient to depend on the remaining part of a hopelessly crippled gland. Besides, the technical difficulties in removing all the gland are by no means small. Something more exact than the grab and cut method commonly employed in thyroidectomy must be adopted. The recurrent nerves and the parathyroids must be spared." "The production of myxedema is still considered an actionable offense, and no one cares to publish evidence for the use of the attorneys for the plaintiff. The law requires the surgeon to exercise the skill common to the profession in his environment. To do better than the average is as great an offense as to do worse."

Goitre: Current Errors in Etiology and Treatment.—Among the errors enumerated by I. Bram (*Endocrinology,* March-April, 1926, vol. 10, page 181) are these:

That we can dispense with the major portion of the thyroid gland is a fallacy employed daily by thyroidectomists.

That goitre is necessarily a disease of the thyroid gland is not true. It therefore must not be treated as a local condition. With few exceptions, all goitres begin as local expressions of disturbances elsewhere in the economy. In regions away from goitre belts simple hypertrophy and colloid goitre are usually not due to lack of iodine, but to the premenstrual status, adolescence, pregnancy, heredity, focal and general infections, intestinal intoxication, pelvic neoplasms, and other conditions away from the thyroid gland. Untreated thyroid swellings of this sort occasionally disappear spontaneously. Most often, however, they persist, and in the course of time pathological changes within the thyroid may so change the mass as to give rise to adenomata or cysts. Thus we now have a kind of local condition requiring thyroidectomy.

That there are two kinds of goitre, simple and toxic, is another common misconception.

That basal metabolic tests are infallible is an error usually entertained by the enthusiastic laboratory man who has not sufficient opportunity to observe the human being under the strain of thyroid dysfunction or of Graves's disease.

That all goitres require surgery is an error that leads to unnecessary thyroidectomies and destruction of confidence of the laity in the medical profession.

That the medical treatment of goitre consists in the administration of iodine is a fallacy responsible for more goitres than have ever been seen before.

The keynote to success in therapeutic management is strict individualization with the administration of such measures as qualified rest, diet, medicaments, occasionally electricity, and psychotherapy permeating treatment in all directions. Having eliminated all discoverable causes, these measures are employed in suitable quality and quantity by the properly experienced internist for the proper length of time. In the event of unequivocal cooperation on the part of patient and household complete permanent recovery occurs within from six to twelve or fourteen months. Such a patient, taught how to eat, how to sleep, how to rest, how to work, and even how to think, is permanently restored to health.

Mammary Organotherapy.—Moderate success was attained by H. Vignes (*Revue Française d'Endocrinologie,* June, 1926, vol. 4, page 165) in the use of mammary extract in fifteen patient s with menorrhagia or metrorrhagia. Two received no benefit, six were temporarily improved, and in seven the amelioration was lasting. He does not think that mammary extract acts by antagonizing the ovary, nor by direct effect upon the uterine muscle or bloodvessels, but rather indirectly through the adrenal glands. Adler, Schiffmann and Vystavel, and Manzi have all observed decided hypertrophy of the adrenals, both cortex and medulla, after experimental injection of mammary extract. It is this hypertrophy and the resulting increased secretion of adrenalin by which he explains the hemostatic effect obtained.

Effect of Posterior Pituitary Extract on Intestinal Peristalsis and Constipation.—This effect is very apparent, say P. Carnot and E. Terris (*Paris Médical,* April 3, 1926), on radioscopic examination. The medication produces colic and copious evacuations, which empty the colon completely. The most energetic, violent, and rapid results follow venous injection in cases of occlusion, of intestinal paresis, of pronounced dyschezia of the sphincter. Muscular injection is more simple, but leads to less energetic, though to remarkable results: it is suitable chiefly in cases of chronic intestinal stasis. The simplest route is by oral administration, affording excellent results in habitual constipation. It renews intestinal tonus and reeducates the musculature of the lower intestine.

Goitre in Chronic Intestinal Stasis.—A. C. Jordan (*International Journal of Medicine and Surgery,* Vol. XXXIX, No. 2), says that though some may question whether all diseases of the thyroid gland are toxic in origin, he has always found profound stasis on x ray examination, while his patients often exhibit other end results of stasis.

As to treatment, surgery may be necessary for a thyroid cyst or tumor or to deal with chronic enlargement of the whole gland, though x ray exposures of part of the gland give good results. In thyroid degeneration the failure of the thyroid hormone can be made good by carefully dosed administration of thyroid gland extract. This, however, must be regarded as a temporary measure; the main treatment must be directed to the relief of stasis and of its attendant toxemia. The thyroid gland is rarely degenerated so completely that it is no longer capable of recovery.

Value of Iodine in the Surgical Treatment of Exophthalmic Goitre.—Edward P. Richardson (*Boston Medical and Surgical Journal,* June 10, 1926), says that in general the use of iodine in exophthalmic goitre has the following temporary effect. Within a day or two after its administration a lessening of the patient's restlessness and emotional instability occurs. The pulse slows and the metabolic rate falls, these changes usually being obvious within three days and reaching a maximum within eight to fourteen days. The flushing of the skin and the stare charactertistic of the disease diminish. Coincidentally the patient recognizes a definite symptomatic improvement, a diminution of nervous tension, a quieting of the heart action, and an increased sense of well being. The reality of the improvement is shown by a tendency to gain in weight. If the patient is in an acute toxic crisis, such as formerly often proved fatal, the vomiting and diarrhea cease, other symptoms are relieved, and a definite remission is instituted.

The degree of benefit obtained by iodine varies in differenet persons. In some cases the basal metabolic rate drops to within normal limits; more frequently it persists at a moderate elevation. In general we may say that somewhat less than half the cases show a marked remission, another third show definite improvement, while in the remainder the effect is slight or absent. Apparently no patients are made worse during the short period of treatment recommended.

The surgical treatment of exophthalmic goitre has been profoundly influenced by the use of iodine before and after operation. Anxiety in regard to postoperative toxic reaction and the necessity for frequent resort to multiple stage operations have been largely done away with. But there are two possibilities of harm from the use of Lugol's solution. The first lies in the indiscriminate giving of iodine to patients with enlarged thyroids. The second is that operators may be led to believe that preliminary use of iodine has solved the problem so that cases of exophthalmic goitre may be treated with as little respect as an ordinary neck dissection. Although iodine has contributed greatly to the safety of operative procedures, this is far from the case. There is still the necessity for careful selection and preparation of cases, and for a conservative estimate of how much surgery a given patient may stand.

In the discussion of this paper Frank H. Lahey stressed the point that the promiscuous use of iodine results not only at times in diagnostic confusion, but also at times in danger. He feels sure he is seeing more and more adenomatous goitre probably made toxic by iodine having been promiscuously prescribed. The type of goitre had not been determined before advising the use of iodine and the administration of iodine in adenomatous goitre is distinctly dangerous.

Goitre in Children in New York City.—Frances Cohen (*American Journal of Diseases of Children,* May, 1926) finds from a survey of 11,084 school girls and 783 school boys in New York City that:

1. The incidence of simple goitre in school children and in the older group of women, and the investigation into the conditions of iodine intake which determine endemic centres of goitre, do not justify a conclusion that New York City is an endemic centre of goitre. The mild sporadic cases of simple goitre which occur among school children seem to be dependent on a relative insufficiency of iodine, due mainly to a physiological cause, namely, puberty.
2. Thyroid enlargements occur in New York City about three times more frequently in girls than in boys.
3. With the girls the percentage of incidence of normal glands seems to vary inversely with the degree of activity of the menstrual cycle.
4. Simple goitre among children in New York City reaches its peak at puberty, between the ages of thirteen and fifteen in both girls and boys.

The mild cases of simple adolescent goitre observed among children in New York City seem to show, in the case of girls, a distinct tendency to spontaneous regression after puberty; in that of boys a complete regression.

The findings of this survey do not justify a recommendation for the adoption of a general municipal or school administered prophylaxis as a public health measure in New York City.

Observations on Goitre in Children.—H. Leslie Cronk (*British Journal of Children's Diseases,* January-March, 1926) finds that some factor seems to exist "which affects the tonsils in such a manner that the rise in prevalence of enlarged tonsils coincides with a diminution of goitre prevalence, and exerts such an effect on the latter that the enlarged tonsil rate at times overrides the effect of increased metabolism needed for increased body weight." The writer has no clue as to the nature of this factor. This short paper includes three charts showing comparative charts for boys and girls from the ages of four to fourteen.

Goitre Incidence in New Jersey School Chidlren.—Herbert S. Reichle (*Archives of Pediatrics,* May, 1926) in examining school children in Irvington, N. J., corroborates the interesting findings of Goldberger and Aldinger that in nongoitrous regions there is a high percentage of "physiological goitre" among girls while boys have a much lower percentage. It seems as if the rise in curve between the ages of nine and eleven is due to the influence of adolescence. The percentage falls off rapidly after the age of sixteen with both boys and girls. Treatment with iodine does not materially aid and the author states he has "never witnessed any reduction in the size of these adolescent goitres though the cases were carefully followed up through months by weekly measurements."

Defects in the Membranous Bones. Diabetes Insipidus and Exopthalmos.—Because of the rarity of the case and the fact that the condition is noticed only in children, Bernard S. Denzer (*American Journal of Diseases of Children,* April, 1926) reports an instance of bone lesion primary to diabetes insipidus. It has been assumed that bone lesions which permit bulging at the occiput and depression at the vertex of the skull may distort the pressure at the base of the brain enough to disturb the function of centres situated there. This point of view has been suggested at least by Grosh and Stifel and is not novel, the writer says.

Exophthalmos also seems to be an incidental and not an essential lesion, due probably to a defect in the bones of the orbit.

SYPHILIS

Bismuth Treatment of Syphilis.—Irwin C. Sutton (*American Journal of Syphilis,* January, 1926) states that bismuth treatment is indicated in the treatment of syphilis when the patient becomes intolerant to arsenicals and in the cases rebellious to mercury and arsenicals. It can also render good service where mercury and arsenic have already proved useful and in syphilis of the nervous system. Bismuth is also well supported by a badly damaged kidney and liver, and albuminuria and icterus have been treated without incident.

The association of the arsenobenzenes with bismuth presents the advantage of building up the general state and of performing a drastic offensive against syphilis. It is possible either to practise mixed treatment systematically, to prevent the appearance of stomatitis, or only to give the arsenicals when intense pigmentation or inflammatory phenomena herald a more serious stomatitis. The possibility of an energetic antisyphilitic treatment is a great advantage, particularly in the early stage of syphilis. One can give a total weekly injection of three cg. of the tartrobismuthate and a weekly injection of 0.6 to 0.9 gm. neoarsphenamine, 0.4 to 0.6 gm. of sulpharsphenamine, the same for silver arsphenamine, or 0.2 to 0.4 gm. of arsphenamine. The bismuth and the arsenobenzene may also be mixed in the syringe.

Bismuth treatment may be given intramuscularly, intravenously, or orally. It is of the utmost importance to watch the patient for any signs of intolerance after treatment has been begun and to look for conditions which might favor complications. It is necessary to practice: 1, oral and dental examination for infection and stomatitis; and 2, urinary examination for the presence of albumin.

The question of dose resolves itself into a consideration of the quantity of bismuth given at each injection and the number of injections and frequency in each series of treatment. Usually the dose is given twice weekly. The repeated weaker doses are preferable and expose the patient less to the danger of stomatitis. These are, however, more for ambulatory patients. In infants the doses will evidently be weaker. Congenital syphilitic children are also benefited by bismuth. The general precepts laid down for the treatment of syphilis are: 1, treatment as soon as possible after the diagnosis has been confirmed; 2, a rapid healing of developing lesions and the production of a substantial social prophylaxis; 3, to obtain rapid healing as evidenced by the seroreaction.

For abortive treatment, one gives a series of twenty injections to the rate of three a week if possible, corresponding to a total dose of 0.6 gm. of bismuth metal. The Wassermann test usually becomes negative soon. A second series is given three to four weeks after the first. If the Wassermann is negative, one should reduce the injections to two a week.

Late cases may be affected profoundly and for a long time usually by insoluble salts given intramuscularly. The duration of treatment and the number of series of injections depends on the precocity and on the power of treatment at the beginning and the regularity of the treatment which followed. Concurrently with bismuth treatment the administration of a sulphur treatment is practiced sometimes with the idea that the sulphur exerts a favorable eliminative action on heavy metals of the atomic weight of mercury and arsenic.

The study of the comparative value of the different bismuth compounds is important. The following insoluble compounds have been recommended: bismuth oxide, quinio-bismuth, precipitated bismuth, bismuth oxychloride, and bismuth salicylate. The soluble compounds are: ethylene diaminobismuthogallate, tartrobismuthate and citrate, and sodium bismuthogallate. Colloidal bismuth is the least toxic and it can be given intravenously.

The author has found the following line of treatment of the utmost value in early syphilis:

1. Arsphenamine in doses of 0.3, 0.5, and 0.5 gm. in the first nine days.
2. Five more injections of arsphenamine at the rate of 0.4 gm. each week.
3. Begin bismuth injections of 0.2 gm. twice a week after the fourth intravenous injection of arsphenamine, and continue until sixteen have been given.
4. The second course consists of six injections of arsphenamine, 0.3 to 0.4 gm. and a continuation of the bismuth injections at the rate of two a week until the end of the course when a rest of four weeks is given.
5. The bismuth is stopped for four weeks when, if there are no signs of intolerance, a second course of twelve to sixteen injections is given with the third course of arsphenamine.
6. Four to six weeks rest from arsenic after the second course of arsphenamine when the third course of four to six intravenous injections of salvarsan is given, with also twelve to sixteen injections of bismuth.

A total of 4.5 gm. of arsphenamine and 9.0 gm. of bismuth are thus administered during the first year.

In latent syphilis and all late syphilis, if the patient is in poor condition, or if he has an acute process in some important structure he should have two weeks' preparatory treatment with mercurial inunctions and potassium iodide before bismuth and the arsphenamines are given. Neo, silver, or sulpharsphenamine is used thereafter according to the patient's condition for six weeks, and bismuth injections in a course of twelve to sixteen. After the course of arsenicals is finished a rest from that treatment is given for from three to six months, with a course of five to ten bismuth injections in the interim, when the course is repeated.

In Wassermann fast and Wassermann resistant cases bismuth is especially useful in reducing the seroreaction. Especially good results are obtained from the combination of a new arsenical with it.

Generally speaking, patients with syphilis of the central nervous system should first receive rigid treatment with arsphenamine and bismuth after preliminary preparation with mercury and potassium iodide, before special procedures are resorted to. If combined intravenous and intramuscular treatment is of little avail, tryparsamide intravenous injection of colloidal bismuth, and intraspinal therapy may then be used.

The Vernes Flocculation Test as an Accessory Serological Guide in the Combat Against Syphilis.—Adelaide P. Bayles, Adele E. Sheplar and Ward J. MacNeal (*American Journal of Syphilis,* April, 1926) state that the Wassermann test, as it has been modified by American workers, is, at present, considered to be the most useful serological guide in syphilis. They believe, however, that the flocculation test of Vernes offers a most useful supplementary diagnostic test to be employed in conjunction with the Wassermann. The Vernes test is of especial value as a guide in the management of old, latent or treated syphilis.

It is a well known but still not adequately appreciated fact that eradication of the syphilitic virus, if it is ever possible, is to be attained more readily when thorough treatment is initiated at an early date after infection. Where the infection has persisted for several years the treatment with drugs at present in use often appears entirely unavailing to produce a serological response even after a period of years. In those patients in whom the virus has become established in the central nervous system, the aortic wall or other site especially favorable to the parasite, attempts at eradication would appear, in general, to be futile. Conservation of vitally important structures rather than the goal of a negative Wassermann should here be the guiding purpose.

Vernes readings are analogous to temperature observations, and monthly tests should be made during the course of treatment. They give a fairly good idea of the response to treatment. Even though the Wassermann may be misleading, it should not be discarded entirely. The chief reason why the Wassermann is misleading is that the report of the result can be readily misunderstood by the uninitiated, especially when the readings are intermediate between four plus and negative. A patient may have a four plus Wassermann when actually syphilis is a negligible factor in his present disease. On the other hand, many are inclined to give too great attention to it and treat the patient for syphilis when his dangerous disease really requires something else.

The Vernes flocculation reading evidently depends in part at least, upon other features of the patient's blood than does the Wassermann reading, especially in latent and in repeated syphilis. Furthermore, the Verness test, properly performed, gives a standardized reading, analogous to the reading of a certified thermometer. Very high Vernes readings, 0.30 or above, point unmistakably to actively destructive syphilis and at once challenges the physician to locate the site of this activity by other diagnostic methods. Low readings, on the other hand, indicate, not necessarily the absence of syphilis but rather the absence of destructive activity. Unless it is quite high, 0.15 or above, the single Vernes test is not of much help in diagnosis of the presence of syphilitic infection,

but with repeated tests after a provocative arsphenamine injection or several such injections, the Vernes reading shows definite fluctuation in practically all syphilitics, often tending to rise in long-standing cases, and to fall at once in more recent infections, whereas in non-syphilitics its value is approximately maintained.

It is proposed that the systematic treatment of syphilis be coupled with an elaborate and definite serologic control consisting of monthly tests of the blood Wassermann and the Vernes methods and semiannual examination of the cerebrospinal fluid; such serologic control to be continued for at least six months after medication has ceased, with subsequent periodic health examination to the end of life.

Newer Viewpoints in the Treatment of Syphilis.—A study and analysis of the present status of syphilological thought, as it is expressed in clinical records and the literature, justify Moses Scholtz (*American Journal of Syphilis,* April, 1926) in drawing the following inferences:

1. The common conception of therapeutic control of syphilis is too dogmatic and schematic and is based entirely on the chemotherapeutic and serological principles, to the complete submersion of clinical and biological aspects.

2. The value of the Wassermann test, completely dominating and controlling the clinical judgment of the observer, is overrated by the average medical man as a diagnostic and therapeutic guide.

3. Serological limitations of the Wassermann test are testified to by persistent efforts of serologists to find other serological substitutes, such as precipitation tests.

4. Precipitation tests, particularly the latest Kahn modification, give promise of supplying a substitute or alternate test for Wassermann.

5. The specific treatment, particularly arsenic, is absolutely curative only in the early stages; then it is our best weapon for an effective abortive treatment. If an early sterilization is not obtained, its effectiveness is dependable so far as symptomatic control is concerned, but as to complete cure it is much less certain.

6. The specific treatment with arsenic, mercury and bismuth is potential of serious toxic reactions in individual cases and should not be given routinely and indefinitely on the strength of positive Wassermann alone in the presence of persistently negative visceral, cardiovascular, and neurologic clinical findings.

7. The chemotherapeutic method of the control of syphilis is subject to the charge of onesidedness and biological inadequacy, as it ignores and even counteracts the function of natural defense mechanism.

8. The nonspecific therapy of syphilis—malaria inoculation, milk injections, serum therapy, etc., offer a new therapeutic principle of unknown significance at present.

9. No definite standard of cure in syphilis can be accepted at present. The clinical valuation of the case should be regarded of equal value with serological findings.

Cardiovascular Syphilis Following Adequate Early Treatment of the Original Infection.—J. Rowan Morrison (*Urologic and Cutaneous Reveiw,* April, 1926) states that not many years ago the idea prevailed that syphilitic individuals properly treated for a sufficient length of time were unlikely to have involvement of the cardiovascular system, and that those who were treated not at all or inadequately were quite likely to develop the aftereffects mentioned. Both the foregoing propositions have been proved fallacious or at least uncertain. Some undoubted cases of syphilis without treatment may pass through its various phases to an ultimate clinical cure; whereas in others, regardless of the manner of treatment, complications and sequelæ develop. This explanation is unsatisfactory, however, when one remembers that complications quite as frequently follow mild or socalded benign syphilis as the more malignant types.

It was formerly quite generally thought that cardiovascular and neurosyphilis were invariably late or socalled tertiary manifestations of the disease, but it is now well understood, however, that there are no time limits which govern the progress of the various phases of the disease, and involvement of the cardiovascular or central nervous system may occur at any period in the course of the affection. Some authors believe that syphilis is a disease of the vascular system from the beginning of spirochetal invasion, and it is certain that involvement of the lympathic structures occurs soon after the spirochetal invasion. The consensus of opinion appears to be that individuals properly treated in the early stages of the disease would be unlikely later to develop aneurysm or cardiovascular syphilis. However, the author has seen several cases in which syphilitic aortitis developed despite three years of treatment with mercury and potassium iodide. The cardiovascular manifestations developed between eight and twenty years after the original infection.

In considering the treatment of syphilis the development of cardiovascular changes must always be borne in mind, and this applies to the modern intensive methods as well as to the older treatment. The most important practical points for consideration are: 1, whether it is possible by the early application of the old fashioned treatment with mercury and the iodides, or for that matter even by the modern intensive methods with arsphenamine and mercury, to prevent the development of cardiovascular syphilis, and 2, whether the heart and aorta as well as the central nervous system may not be involved before the secondary manifestations of syphilis appear. Whether or not individuals treated by the newer methods will enjoy greater freedom from cardiovascular and neurosyphilis cannot be foretold.

Chronic Indigestion and Syphilis.—Albert Crance (*Urologic and Cutaneous Review,* April, 1926) found that in approximately ten per cent. of latent cases of syphilis there are stomach symptoms. One of the first symptoms of a spinal cord lesion of latent syphilis is apt to be indigestion in some form or other. There may be nothing else associated with it symptomatically, and yet how often is the etiology of indigestion gone into thoroughly? Refractory cases of indigestion are usually subjected to gallbladder and appendix operations before the diagnosis of syphilis is finally made. Stomach trouble, associated with a history of a "previous nervous breakdown" is almost a constant fact in these histories. In all such cases a complete physical examination, especially for signs of tabes, should be made. Interpretations of the blood Wassermann reaction are absolutely essential and a spinal fluid Wassermann is often necessary.

In making differential diagnoses between the stomach symptoms of syphilitic disease and those due to other causes, we must first consider that there are two types of pathology in syphilis which produce stomach symptoms. The first is that of specific ulcer, which may occur in the stomach or duodenum, due to the disease itself. Secondly, we have the cases with gastric symptoms which are caused indirectly from involvement of the spinal cord, which throws its reflex into the vagus network and consequently gives us chronic indigestion, or often acute indigestion, as a symptom.

Principles of Treatment of Wassermann Fast Syphilis.—Leon B. Cowen (*Urologic and Cutaneous Review,* April, 1926) states that obviously it is more rational to have an active, useful, and clinically healthy patient with a positive Wassermann than to have a crippled, helpless invalid with a negative one. In the handling of Wassermann fast syphilis it is necessary: 1, to understand the biological factors which cause the condition known as wassermann fast; 2, to know the action of the various antisyphilitic drugs upon the human organism, giving them their proper evaluation; 3, to prevent the Wassermann fast state from occurring, if possible; and 4, to correlate these facts into a logical system of treatment, applied to the biological needs of the individual patient.

To understand the biological factors underlying the Wassermann fast state of syphilis, we must study the patient by means of a complete physical and neurological examination. All foci of infection should be treated. The central nervous system should receive special attention and a lumbar puncture should be done.

The arsphenamines are of real value, this applying especially to intramuscular injections of sulpharsphenamine in late syphilis, central nervous system involvement and in Wassermann fast syphilis. Mercury, bismuth and the iodides act only indirectly by stimulating the protective mechanism of the body.

The ideal treatment of syphilis is to rid the patient of all physical signs of the disease and to obtain a negative Wassermann. The patient should be given the maximum treatment that he can endure without injury. This intensive treatment must not be so vigorous as to overwhelm the body cells completely and prevent the normal elaboration of antibodies. To continue to give the patient his maximum treatment when the Wassermann remains persistently positive, is not only useless but dangerous. Arsenic, mercury, and bismuth are potentially protoplasmic poisons. Small doses given over a long period of time produce destructive lesions in the liver and kidneys.

In Wassermann fast syphilis the difficulties of complete sterilization are increased and the treatment is more complex than in the early stages, as the spirochetes are latent in the cardiovascular and nervous systems and periosteum. The patient's health suffers from the drugs poured into the body in the effort to eradicate the spirochete. It is then the physician's duty not only to control the infection but also to conserve the health of the patient. Mixed therapy with drugs adapted to reaching hidden foci of infection is indicated.

The Wassermann test is an index of infection of the body with the spirochete. A positive Wassermann implies syphilis whether physical signs are present or not. A single negative Wassermann does not rule out syphilis. The serological examinations are done for two purposes: to make a diagnosis when physical signs are vague or absent, and to determine a cure. A careful history of the patient's treatment up to the present time will often give a clue as to the cause of failure to obtain a negative Wassermann. To repeat the course of treatment after a thorough course of specific treatment is dangerous.

If no treatment has been given for a period of over six months, eight injections of neoarsphenamine may initiate the course. Three courses of neoarsphenamine and mercury given over a period of a year suffice. Each course consists of neoarsphenamine 0.6 gram given weekly for eight weeks and bichloride of mercury in oil given biweekly for six weeks with a four weeks' rest between courses. If the Wassermann taken one month after the cessation of treatment is positive, the patient may be called Wassermann fast. Further treatment along these lines is useless.

The problem must now be attacked from the angle of immunology. In susch cases, sulpharsphenamine intramuscularly in doses of 0.3 to 0.45 gram. given in 1.5 c. c. sterile distilled water, is the arsenical of choice. After a rest of one month, eight injections are given at weekly intervals. Following this, bismuth salicylate, grains 2, is given twice weekly for six weeks, completing the course. Bismuth acts more powerfully than mercury on the body cells to help destruction of the parasites and is useful in all resistant cases of syphilis. After this the patient is told that the disease is arrested but not cured and he is given forty mercury rubs. He must return after three months and if the Wassermann is then positive, he is reexamined and the spinal fluid is tested. If the latter shows a positive Wassermann, a course of sulpharsphenamine and bismuth is again given. Henceforth, bismuth and mercury should be given by choice. One course of bismuth salicylate, twelve injections, and one course of mercury, bichloride in oil, biweekly, or two courses of inunctions during the period of one year, will keep the infection in check.

To raise the general immunity of the body, nonspecific protein injections with milk or gonococcus vaccine may help. This form of treatment is still in the experimental stage.

Recurrent Early Syphilis.—Charles C. Dennie (*American Journal of Syphilis,* April, 1926) applies the term "recurrent early syphilis" to those cases that present cutaneous syphilitic manifestations secondary in character, following the initial course of treatment with the arsphenamines. These manifestations make their appearance shortly after the course is ended. The great majority recur within the first six months and a few show active syphilitic manifestations during intensive treatment. Recurrent syphilides cannot be differentiated from the usual secondary eruptions, except that they are usually more intensified and are prone to take on abnormal characteristics, either in configuration or in distribution. In some instances, the recurrence may be limited to a single lesion, which is sometimes erroneously considered to be a primary sore, and the patient diagnosed as a case of reinfection. Such lesions are alive with treponemas and are very highly infectious.

Recurrent syphilis is caused by the following factors: 1, early insufficient treatment; 2, failure in an abortive cure; 3, the initial treatment with the arsphenamine in the preeruptive and eruptive stages, thus decreasing the patient's immunity; 4, small doses of arsphenamine, spaced too far apart, producing arsenic fast organisms; 5, overarsphenaminizing and undermercurializing the patient.

Recurrent syphilis is prevented by the following measures: 1, Early, energetic, long continued treatment; 2, the use of mercury in the eruptive and preeruptive stages of syphilis for at least three months, after which arsphenamine may be used; 3, arsphenamine should be used in maximum doses at frequent intervals, keeping contraindications in mind; 4, one should keep in mind that mercury is still our best therapeutic agent.

When the actual occurrence has taken place one should use: 1, Old arsphenamine in maximum doses, spaced correctly, until the patient is noninfective; 2, intramuscular or intravenous use of mercury to the limit of tolerance, alternated by courses of bismuth.

Results with Tryparsamide in the Treatment of Neurosyphilis.—Continued observation for a fairly long period has convinced Louis Berg (*American Journal of Syphilis,* April, 1926) of the value of tryparsamide in producing clinical improvement in over forty per cent. of cases that were not selected, observing only the precautions not to take those susceptible to optic nerve damage. Another five per cent. at least were moderately improved by the treatment.

The improvement in the clinical symptoms is not often accompanied by a corresponding change in the Wassermann reaction, as many of the markedly improved patients had a strongly positive Wassermann at the end of treatment. However, in a small group of cases the author was able to change the Wassermann from positive to negative in association with clinical improvement. A large number of cases showed a decided reduction in the cell count from a very high count to zero, or within normal limits.

The use of tryparsamide intensively is indicated in neurosyphilis as with it one may hope to secure definite improvement in a fairly large percentage of cases, and in a small percentage, to achieve a corresponding serologic improvement. The untoward action of the drug can be guarded against by careful routine ophthalmoscopic examination and the immediate cessation, with the institution of eliminative measures, should transitory visual symptoms occur. Clinical improvement was indicated in many cases during the first and second courses of treatment. The treatment should be continued even after decided clinical improvement has taken place. It should be repeated after a rest of several months and five and even six courses may be given without danger to the patient if proper precautions are taken.

PEDIATRICS

Infectious Mononucleosis in Childhood.—Murray Harold Bass (*Medical Clinics of North America,* November, 1925) remarks that infectious mononucleosis is a definite syndrome closely related to glandular fever. Its course may often be quite prolonged; it may take months before the swollen glands disappear and the blood count returns to normal. The nodes are usually not very painful and almost never go on to suppuration. The progress of the disease almost invariably leads to complete recovery.

Infectious mononucleosis may affect people of all ages, but chiefly attacks children and young adults. Males are more often affected than females. It is an illness which usually begins with a sore throat, and therefore is frequently mistaken for socalled grippe. The nasopharyngitis which heralds its onset is not different in any way from the ordinary affection to which so many children are heir, and cultures taken from the throat have shown nothing in particular. Following the pharyngitis, the cervical and other regional lymph nodes become enlarged. They may be moderately enlarged or may reach the size of glands seen in the course of leucemia. In most of the reported cases only the superficial nodes are mentioned. However, the deeper lying nodes may also be involved.

Operative Treatment of Hernia in Infants and Young Children.—Andrew Fullerton (*British Medical Journal,* February 13, 1926) reports the use of the simplest type of a conservative operation for inguinal hernia in infants and young children. The technic is as follows:

An incision about an inch long is made over the upper end of the sac, the cord is isolated, and the index finger of the left hand is passed under so as to spread out the component parts. With light touches of a sharp knife the successive coverings are divided longitudinally and reflected till the sac is reached. The latter can then be separated by blunt dissection with gauze and forceps until the neck is freed as high up as possible, taking great care to avoid injury to the delicate vas. The neck of the sac is then transfixed with a small round needle, tied off with fine catgut, and allowed to retract. In female children it is impossible in most cases to separate the round ligament from the sac, and this structure is therefore included in the ligature occlud-

ing the neck of the sac. In all cases, male and female, it is a wise precaution, just before ligating the neck, to open the sac, so as to exclude the possibility of the presence of abdominal contents. The inguinal canal is not interfered with in any way, and only in a very few cases were sutures placed in the pillars of the external ring. After tying any bleeding vessels the skin wound is closed with a subcuticular silkworm gut suture, the ends of which are tied over a pad of gauze, which is left in position until the wound is quite dry. The suture is then cut about an eighth of an inch from the point where it enters the skin at either end of the wound, and a collodion dressing is applied.

Patients who were operated upon in the out patient department were taken home as soon as they recovered from the anesthetic, and were brought back for observation after two or three days. The author's statistics show conclusively that operations for hernia in infants and young children are as safely conducted in the out patient department as in the wards; in fact, if anything the balance is slightly in favor of the out patient department. Two great advantages are gained by operating in the out patient department:

1. The child, if being nursed by its mother, does not suffer the inconveniences and risk of being weaned.

2. The range of usefulness of the hospital is enormously increased, as the necessary beds are available for other patients, especially in a small children's hospital.

Respiratory Catarrh in Children.—Routine examinations, conducted on young infants, three to six weeks of age, convinced Richard C. Clarke (*Lancet,* October 24, 1925) that at least half of them already had respiratory catarrh. The development of respiratory catarrh probably depends on two main factors: 1, The number and virulence of the catarrhal organisms which attack the mucous membranes; 2, the local resistance of the mucous membranes and the general immunity of the body. From clinical observation it appears, 1, that the very young mucous membrane is deficient in resistance; 2, that after early and repeated attacks, either loses or never acquires an adequate resistance.

The sources of the infection are usually the mother and the germ laden atmosphere. Infection may be prevented by the mother wearing a mask in case she has an acute catarrh when the baby is born. In general, children should be kept away from people with colds and children's parties as much as possible, especially the latter.

Value of Blood Transfusion in the Newborn.—Paul Guéniot (*Bulletin de l'Académie de médecine,* March 2, 1926) calls attention to the powerful effects to be expected from blood transfusion in the newborn owing to the fact that merely twenty mils of blood correspond to one tenth and one hundred mils to one half of the entire mass of blood in the child's body. In twenty premature infants the author, with Seguy, injected ten to twenty mils of citrated blood from two to twenty-six days after birth, on account either of low vitality, a marked or progressive and disquieting loss of weight, or persistent failure to gain in spite of specific treatment where indicated. Some infants had a subnormal temperature, or attacks of cyanosis, or were unable to feed. In sixteen of these infants transfusion was followed by a gain in weight, which began on the next day in ten, on succeeding days in four; and after a second transfusion in two. In eleven out of twelve infants which remained under observation this gain continued progressively. In five hypothermic infants the temperature rose on the day after transfusion and remained close to normal thereafter. In three children attacks of cyanosis ceased, and others were enabled to take the bottle and later nurse at the breast. Excellent results were obtained in the premature infants of three tuberculous mothers, transfused on account of marked or progressive loss of weight. The transfusion supplies the infant not only with erythrocytes and hormones, but also with leucocytes, in particular the polymorphonuclears, in which the blood of the young infant is relatively poor, and which assist digestion and assimilation through their ferments. The donor is usually the mother, unless she has tuberculosis or other infection or her blood is incompatible. The site of injection is the superior longitudinal sinus which, Seguy has found, is reached with least difficulty in these small infants from the posterior fontanelle. The injection should be made slowly. With the head well immobilized and careful procedure, the author anticipates no difficulty in keeping the needle in the sinus. The procedure is not indicated in all premature infants but is the most hopeful measure at hand for those which fail to thrive under usual care.

Fasting as a Cause of Convulsions.—In a paper by Hugh Josephs (*American Journal of Diseases of Children,* February, 1926) attention is called to short fasting periods as a cause of convulsions in children, especially that type of convulsion which is seen at the onset of acute infections. Studies carried out on several children indicate that these convulsions are probably of hypoglycemic origin. The close association of this type of convulsion with the attacks of recurrent vomiting is also brought to notice. As this was a clinical study no attempt was made to discuss the mechanism of the hypoglycemia or the significance of the acetonemia that accompanies the attacks.

Actinotherapy in Pediatrics.—The field of inquiry into the exact manner how ultraviolet rays exert their beneficial effect is by no means exhausted according to J. H. Gettinger (*Archives of Pediatrics,* Vol. 43, April, 1926) and while it is known that these rays are absorbed by the blood, it is not known how it is stored, or in what manner or form it is set free in the tissues. In this respect, the ultraviolet rays resemble very closely the vitamines.

The author's experience in regard to pertussis was that in the majority of twelve cases there was a marked improvement after the first few exposures to the rays, both in the vomiting and in the intensity of the paroxysm. Many patients lost their "whoop" entirely after ten exposures. One child, two and one half years old, lost its whoop after the fourth exposure.

Light and the A-body.—In an interesting investigation of light and the A-body, C. E. Bloch (*American Journal of Diseases of Children,* Vol. 31, March, 1926) is led to the opinion that "light cannot replace the A-body or supply it to the animal organism," although light and the radiant energy of ultraviolet light is essential to various functions of the organism. Two cases of xerophthalmia which are described were not cured by exposure either to the carbon arc light or to sunlight. In plants, however, the light rays of sunlight or the carbon arc light both produce the A-body; the ultraviolet rays are inactive in this respect.

Thyroid Extract "Injections in Certain Infantile Cachexias.—P. Nobécourt and M. M. Lévy (*Presse médicale,* February 27, 1926) report good results from injections of a fluid thyroid extract in large doses in some cachectic nurslings. They injected fifty to 100 milligrams of extract daily for ten or fifteen days. Among the illustrative cases is one of a child two and a half months old weighing 2,750 grams, 310 grams having been lost since birth. Under the thyroid treatment the child was considerably improved, leaving the hospital weighing 3,800 grams; twenty days later the weight was 4,410 grams. A child six and a half months old, admitted weighing 4,800 grams, dropped to 3,670 grams following a severe attack of scarlet fever with complications. The condition being desperate the thyroid treatment was begun and the child left the hospital weighing 4,180 grams. Six weeks later it weighed 5,500 grams.

Chylothorax in the Newborn Infant.—Chester A. Stewart and H. P. Linner (*American Journal of Diseases of Children,* May, 1926) tell of a fatal case of chylothorax in an infant, aged four days, due apparently to a rupture of the thoracic duct. In the amounts given, the oral administration of sudan III failed to stain the fat droplets in the chylous fluid. A golden yellow color of the chylous fluid present the first few days apparently was due to lactochrome (carotin, largely) derived from the colostrum the baby obtained at the breast. Following the injection of sterile congo red into the peritoneal cavity, the dye appeared in the chylous fluid in the pleural sac.

Osteomalacia in Children.—Two cases of osteomalacia occurring in children are reported by Hugh L. Dwyer and Orren S. Eckelberry (*American Journal of Diseases of Children,* May, 1926). Studies on the mineral metabolism indicate that there is a lowered retention of calcium, magnesium and phosphorus. In one patient the calcium loss reached a negative balance. The mother of one patient had a history of six fractures, indicating the probability of bone pathological changes. A brief review of the literature on the etiology of osteomalacia and its relation to rickets is presented.

Flatfoot in Infants and Children.—Philip Lewin (*American Journal of Diseases of Children,* May, 1926) in a compact little article clearly illustrated with diagrams and pictures urges that more consideration be given to the condition of flatfoot among infants and children. There is advice on shoes and foot exercises.

MEDICAL JOURNAL AND RECORD

A National Review of Medicine and Surgery

Gregory Stragnell, M. D., *Editor*

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Medicolegal Notes.

PRIVILEGE OF REFUSING TO DISCLOSE AILMENT OF ABSENT WITNESS

In a personal injury case a physician was called by the plaintiff to testify that another witness, M., was physically unable to be present in court. This was for the purpose of laying a foundation for the introduction of M.'s deposition, taken some time prior thereto. The relation of physician and patient had been established as a matter of law. The physician, after testifying generally on direct examination that M. could not be present in court, was interrogated by counsel for the defendant, who endeavored to elicit the exact nature of the patient's infirmities. Upon his own motion the physician refused to testify in this behalf on the ground that to do so would be to violate a professional confidence. The trial court sustained the witness in his refusal to testify, and the California Supreme Court holds, Darling v. Pacific Electric Ry., 242 Pac., 703, that in so doing no error was committed. The court said: "This is a personal privilege given to the patient, and no one, except in certain specified cases, has the right to waive the same for him. This rule of privilege applies although the patient is not a party to the action in which a disclosure is sought and is not present to object. There was no express or implied waiver of this privilege by the patient in the instant case, and, in the absence thereof, the physician was clearly within his rights in refusing to testify concerning a matter which could not be divulged without a breach of professional confidence." The deposition by the patient did not, it is held, waive the privilege.

CALIFORNIA STATUTE OF 1925 AS TO QUALIFICATIONS OF DRUGLESS HEALERS HELD NOT VIOLATIVE OF FEDERAL CONSTITUTION

In a suit to restrain the enforcement of chapter 10 of the Session Laws of Washington for 1925, which provides for the revocation under certain circumstances of licenses issued to drugless healers, the federal district court for western Washington, Butcher v. Maybury, 8 F (2d) 155, bases its decision denying the injunction upon the following grounds, for which the court cites many authorities.

"The right of a physician to practice his profession is a property right, of which he cannot be arbitrarily deprived. The right is a qualified one, and is held in subordination to the duty of the state under the police power to protect the public health. The police power cannot be stipulated or bartered away. The authorities hold without dissent that it is competent for the Legislature to prescribe qualifications for those who are to practice medicine and thus to assure that they shall possess the requisite character and learning The regulation of drugless healers is a proper exercise of the police power. The regulatory power of the state may be properly committed to an administration board or officer. These regulatory statutes may be made operative on those engaged in practice prior to the enactment of the statutes. The state may change the qualifications from time to time, making them more rigid. The Legislature may prescribe qualifications, both as to character and learning, which will require those in practice to give up their occupation. Legislation prescribing qualifications which a practitioner cannot meet because of conditions antedating the enactment of the legislation is valid. Such legislation does not constitute punishment; it is legitimate regulation. The limitation on the above doctrines is the principle that the regulations must be reasonable and must bear some relation to the service to be rendered by the practitioner.

"The changes in the qualifications of drugless healers, made by the act of 1925, were within the legislative discretion. It is not unreasonable to exact a high school education or its equivalent as a proper standard of general education. Neither is it an arbitrary exercise of legislative power to require a residence course of three sessions, consisting of thirty-six weeks each, in a school of approved standing.

"The power of the state to require a license implies the power to revoke a license which has been improperly issued. Provision for the revocation of such licenses is made by the act of 1919, whose constitutionality is not under attack. The statute in question merely changes the procedure required for such purpose.

"The act of 1925 provides for notice and hearing to a licentiate whose license is proposed to be revoked. He is entitled to the compulsory attendance of witnesses and to be represented by counsel. If the issue is determined against him, he has a right to review the action of the director of licenses in the superior court for Thurston County. This procedure abundently meets the 'due process' requirements of the Fourteenth Amendment."

The statute, it is held, does not deny to the praintiff the equal protection of the laws.

It is not invalid as a bill of attainder, which is a legislative act inflicting punishment without judicial trial.

It is not invalid as an ex post facto law, although the licenses of some practitioners might be revoked on account of inability to meet qualifications prescribed since the liceness were granted.

"A constitutional statute may be enforced so arbitrarily as to violate the right of a party to pursue his occupation, but the presumption is that boards and officers will be actuated by good motives and will act fairly"

The bill contained no allegations to rebut these presumptions.

The statute was also attacked as violative of various provisions of the state constitution. The federal court declined to pass on this contention, since the state supreme court had declined to pass on the conformity of the statute to the state constitution.

INDICTMENT CHARGING SEPARATE VIOLATIONS OF HARRISON ACT

The Circuit Court of Appeals, Eighth Circuit, holds, Daugherty v. United States, 2 F (2d) 691, that under an indictment charging in three separate counts separate violations of the Harrison Act, §2, the contention that each sale should be taken as resulting from the same criminal intent and that the three counts therefore charged only one crime was not sound, because criminal intent is not an element of the crime, and because each count charged a different sale to a different person and on a different day, and if the sales were made as charged they constituted three separate offenses.

CLASSIFICATION OF MINERAL WATER AS FOOD OR DRUG

The Circuit Court of Appeals, Sixth Circuit, holds, Goodwin v. United States, 2 F (2d) 200, that where the consituent drug elements of a mineral spring water are not completely extracted therefrom and transported and sold without the admixture of other elements, but the processes of separation are carried to such an extent that the water can no longer be used as a beverage, but only in small quantities or doses as a medicine, it cannot be classified as a "food," but comes within the meaning of "drug" as used in the Federal Pure Food Act and amendments thereto.

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A Survey of Important Factors Leading Up to Our Present Conception of Tuberculosis*

FRANCIS MARION POTTENGER, M.D.
Monrovia, California

Tuberculosis has been recognized as a clinical disease throughout historical times; and until within the memory of those of the present generation it has been looked upon almost universally with utter despair and hopelessness. During the greatest portion of this time it was known only by its advanced symptomatology.

AUENBRUGGER AND LAENNEC

Not until Auenbrugger (1) described percussion (1760) and Laennec (2) began to make systematic use of auscultation (1815) did any one attempt to critically examine the patient. It seems strange to us to realize that physicians had not previously thought of percussing or listening to the chest of tuberculous patients. It seems equally strange that those who percuss and auscultate today do not seem to realize that they can palpate the chest and differentiate all the things that they now do by percussion, and some with much greater accuracy. It seems doubly strange that when Laennec once listened he heard so accurately and defined his observations so well. He created a new era. He lifted clinical tuberculosis out of chaos and started a process of definition which has required pathology, bacteriology, animal experimentation, serology, röntgenography and the most accurate and painstaking clinical study to complete.

KLENCKE AND VILLEMIN

In the early centuries certain Greek physicians considered tuberculosis to be infectious. Galen so considered it. Morton in 1689 taught the infectious nature of the disease. In 1782 an edict was issued in Naples based on a belief in the infectious nature of tuberculosis. It required that bedding and furniture in rooms occupied by those dying of consumption should be destroyed by fire. This was a great advance for the time and, while unnecessarily harsh, it shows a conception of the disease which belonged to a much later era.

Klencke (3) in 1843 was probably the first one to transmit successfully tuberculosis to an animal by inoculating it with caseous material from a necrotic tubercle. To him almost belonged the honor of proving the infectious nature of the disease. But he did not carry his work sufficiently far. He left the honor to Villemin (4) to transmit the disease from man to animal and then by taking material from the tuberculous animal again to produce the disease in a second animal. He thus beyond doubt produced the complete experimental evidence which proved the infectious nature of tuberculosis. This he accomplished in 1865—nearly twenty years before the discovery of the nature of the infectious virus with which he was dealing.

BAUMGARTEN AND KOCH

As there were two between whom the credit for establishing the infectious nature of tuberculosis must be divided, so there are two who deserve the credit for discovering the tubercle bacillus. Baumgarten had seen the tubercle bacillus through the microscope previously to the time when Koch made his epochmaking announcement. Baumgarten (5) had seen it unstained; but Koch (6) with his wide knowledge of dyes had been able to produce a stain which rendered it unquestionably visible. His work was so complete that when he announced the discovery of the bacillus, his experimental proof withstood the scrutiny and attacks of all experimenters and opponents. While Klencke and Baumgarten are important contributors to the proof of the infectious nature and bacteriological cause of tuberculosis, it is to the greater ones, Villemin and Koch, that our homage is usually paid.

INFECTION AND HEREDITY

After the discovery of the tubercle bacillus had offered the final argument to Villemin's work we entered on an era of bacterial domination. The tubercle bacillus was considered the essence of tuberculosis, both in the realm of prevention and in the clinic. The idea of the disease being inherited was swept away, and scarcely a trace of the possibility of hereditary factors having any part in the picture was left. Although this was too sweeping, it has taken nearly half a century even to approach an equilibrium and give heredity its rightful place in etiology.

The interpretation of facts which seem to be indisputable is forcing us now to look upon heredity as offering the only answer to part of the problem of

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tuberculosis as a clinical disease; not the inheritance of the infection but the inheritance of characteristics or qualities of cell and cell action which permit the almost universal infection to become active in certain instances while it is held within bounds in others. While the dictum of the era of bacterial dominance that "there can be no tuberculosis without the tubercle bacillus" is true, we are gradually recognizing that the bacillus alone may only cause tuberculous infection; it does not necessarily cause tuberculous disease. Tuberculous disease implies something different—an inability on the part of the individual to overcome his infection. In present immunological terms this means either a failure to develop or a failure to maintain a sufficient specific defensive mechanism. Observation shows that this factor differs with different individuals, and depends upon his vigor and his reacting powers, consequently upon both his heredity and his environment.

No one can observe tuberculosis carefully without seeing that the ability of different patients to react in the formation of scar and healing differs greatly; likewise the power to prevent the spreading of the process. One person will heal with much scar; another with a small amount. One will make as much progress in recovery in a few months as another in many. This must be accounted for as being due to the total ensemble of the patient's reacting powers; both inherited and acquired, both specific and nonspecific.

TUBERCULIN ERA—INTENSIVE STUDY

Koch (7) noted that, when an animal already tuberculous was inoculated again with bacilli, it reacted differently from what it did when inoculated for the first time. He noted, as a result of the second inoculation, that the animal already infected reacted with an inflammatory process around the previous existing tubercles, and further recognized this inflammation as a part of the mechanism of healing. Shieck saw experimental tuberculosis of one eye protect a rabbit from a later inoculation in the other eye.

Koch grasped more fully than others of that period that healing was an immunity response, and that a primary infection increased the animal's resistance to a later inoculation; and further, that subsequent inoculations had a tendency to produce healing in previously existing foci. He therefore noted, too, all important effects of tubercle upon the organism: first, that it produced immunity; and second, that secondary inoculation acting through the immunizing mechanism already established produced a specific inflammatory reaction about previously existing tubercle which was often followed by healing. Further observation shows that this healing effect is greater where the secondary infection is not too extensive; and that, where the secondary inoculation results in a too severe process, the primary effect is a severe inflammatory reaction at times followed by softening and sloughing. Even this destructive process must be considered as conservative for it is Nature's way of eliminating infecting and toxin producing substances even though the process frequently proves too drastic for the patient.

Koch then set about to find some specific product which would produce the same immunizing and healing response as living bacilli without exposing the patient to the danger of a too severe reaction and a renewed infection. This resulted in the tuberculins prepared by him as well as the many preparations made by others.

In spite of the fact that tuberculin will produce the specific inflammatory reaction which is a necessary part in the healing of tuberculosis the remedy has not come into general use, largely, in my opinion, because of a failure on the part of the profession to understand its action and to master its administration. While tuberculin proved disappointing to those who looked for a specific remedy, easy of administration and perfect in its action, yet directly and indirectly it has been the cause of important contributions to our understanding of tuberculosis. As a result of the discovery of tuberculin and the attempts which were made to employ it clinically, scientific men began laboratory and clinical studies which have been responsible for much of the rapid gain in our knowledge of the disease during the past twenty-five years. Pathologists who had found tuberculosis of little interest before began to study it intently, and clinicians observed their patients more closely and gained a more comprehensive and accurate idea of the clinical manifestations of the disease.

As a result of the diagnostic power of tuberculin, clinicians learned that tuberculosis could be diagnosed before bacilli were found in the sputum; so, the first real early picture of clinical tuberculosis was obtained as a result of its diagnostic use.

The serological aspects of tuberculosis have also been studied most carefully and we have arrived at a better understanding of immunity, not only in tuberculosis but in infections in general, as a result of studies stimulated by the serological reactions. Nor must we forget the impetus that was given to the successful treatment of tuberculosis which resulted from the greater interest in the disease and the more careful observations which date from the tuberculin era.

While, in the minds of many, tuberculin failed, it was a most successful failure, if we take into consideration the increased knowledge of our understanding of the disease and in the manner of successfully preventing and treating it which resulted directly and indirectly from tuberculin. As to its value as a therapeutic measure, the preponderance of opinion does not recognize its value and is opposed to its use. On the other hand, there are a few men throughout the world who have been so impressed with the therapeutic action of tuberculin, because of its power to produce the specific allergic reaction in tubercle which is essential to healing, that they have diligently striven with what seems to them, at least, a degree of success, to develop a method of successfully employing tuberculin in therapy. It is a significant fact that rarely has one, who has learned to employ tuberculin therapeutically, relinquished its use.

VON PIRQUET'S AND RÖMER'S CONTRIBUTIONS

One of the most important and farreaching contributions to the understanding of tuberculosis as a disease was made by von Pirquet (8). When he discovered the fact that the skin of a person once infected by tubercle bacilli is hypersensitive to tuberculin he established a method by which we were able to gain our first real evidence of the extent to which the human race is infected with tubercle. This was

followed by the intracutaneous test of Mendel (9), which was perfected by Mantoux (10).

The surprising outcome of the cutaneous and intracutaneous tests applied to large groups of people of all age periods was the knowledge for which we were little prepared, that nearly the whole population is infected with tuberculosis before the attainment of the fifteenth year. The further important fact adduced from these tests, which was likewise revolutionary, was that there is a difference between tuberculous infection and tuberculous disease. While infection is more or less general, disease is restricted to a comparatively small group. Further inquiry reveals that there are two distinct types of clinical tuberculosis; that of childhood, which is of an acute nature, and that of adult life, which is a chronic disease. From this the important facts were established, through the work of Römer (11) and others, that early infection confers an increased resistance or immunity which offers a certain degree of protection against future metastases from foci already present in the body or from bacilli gaining access to the body from without; that adult tuberculosis is directly related to childhood infection, and that the chronic character of adult tuberculosis is due to the increased resistance brought about by the childhood infection.

Thus our conception of tuberculosis as a disease was greatly modified, and a basis for the better understanding of its problems was established. The true problem as established is not so much to prevent infection, but (1) to prevent massive infection and (2) to prevent infection from becoming clinical disease.

BODINGTON AND BREHMER AND SANATORIUM TREATMENT

Although tuberculosis had caused more deaths than any other disease throughout all the period of recorded history, yet there was no definite concerted attempt to treat it until near the close of the last century. While a few men had appreciated the fact that it was a disease which could best be treated in special institutions, with a special régime, and Bodington of Warwickshire had attempted institutional treatment of the tuberculous before the middle of the last century (1840), yet the first permanent institution for the systematic treatment of tuberculosis was established by Brehmer at Görbersdorf in 1859.

Brehmer developed tuberculosis himself when a medical student in Vienna. He noted something that seemed to have escaped the eyes of most men, viz., that in the postmortem room there was much evidence of healed tuberculosis. He noticed that the lesions which healed were the small ones. He wrote his graduating thesis on the subject, Early Tuberculosis Always Curable. While looking for hope for himself he found it for others.

He believed that tuberculosis was caused by the heart being relatively small, and adopted exercise, particularly hill climbing, as a part of his therapy, the amount of exercise and climbing being carefully adapted to his clinical conception of the patient's needs.

Dettweiler, who was a patient of Brehmer, as well as his assistant for six years, thought he noted that harm was being done to many of the patients by the exercise and climbing; so he advocated rest, and when he left Brehmer he went to the Black Forest and established an institution at Falkenstein (1874), in which one important part of the treatment consisted of long hours of reclining on couches on verandas or in *Liege Hallen*, as they were termed. This was the beginning of the rest cure of tuberculosis, which is emphasized so much in all of our modern sanatoria.

Trudeau established the first sanatorium in America in the Adirondacks in 1884. There, isolated in the wilderness, himself a victim of the disease, he not only made the sacrifice to regain his own health but devised means for aiding others. He there started the first scientific investigations on tuberculosis in this country and maintained until his death a keen interest in and an advisory relationship toward everything associated with tuberculosis—its prevention and cure.

Institutions were established here and there at rare intervals until finally the movement was given great impetus by the German Tuberculosis Central Committee, which began its work in 1896. The subject was furthered by the Tuberculosis Congress held in Berlin in 1899. The movement for public sanatoria made further headway in the early years of this century and the principle that each community should care for its tuberculosis as well as other diseases was emphasized.

The importance of the sanatorium as a factor in solving some of the important therapeutic problems in tuberculosis cannot be overemphasized. The treatment of tuberculosis consists of a definite mode of life under constant control and supervision. This has been worked out by close observation of patients in sanatoria in a manner in which it could not have been done in the home. The measures which are most valuable in the treatment of tuberculosis are so simple that it is difficult for the patient and friends to grasp fully the idea. It is really a life that they must live. In the home with its distractions and interferences it is very difficult for the proper helpful atmosphere and surroundings to be provided.

The greatest number of people who have tuberculosis come from the ranks of the poor, whose homes are ill adapted to giving the tuberculous patient the conditions that he needs and to assist him in carrying out a carefully planned program. The homes of those in better circumstances likewise are rarely much better suited to following out such a program. Many well to do patients, particularly the more wealthy, are in the habit of having what they want, being able to purchase it with money. Now comes something that they cannot purchase. They can only attain it by making the sacrifice. To accomplish this they need as much help as the poor, but of a different kind.

It is equally difficult, if not more so, to adapt the average home of the well to do patient, filled as it is with the joys, gaieties and distractions of everyday life, to the treatment of tuberculosis, than it is that of the poor.

In order to obtain results in a large proportion of patients suffering from tuberculosis, institutions for their proper guidance and control are not only desirable but essential. Getting the patients away from the harmful advice, anxiety and interference of friends, even though it is for only part of the time, is of tremendous value.

THE PRESENT CONCEPTION OF TUBERCULOSIS

Our present conception of tuberculosis may be stated something as follows: An infectious disease which is mildly transmissible, the first infection usually gaining entrance to the body in childhood. This infection, unless the numbers of bacilli causing it are too large, results in the establishment of tubercle, followed by a stimulation of the immunizing mechanism of the individual. From this early focus of infection, unless it heals complete, likewise from new infections from without, repetitions of implantation with formation of tubercle occur, each of which results in increased immunity. A great proportion of these early infections never result in more than local tubercle and heightened immunity; others result in a more extensive implantation and a failure to heal, terminating in clinical tuberculosis. The time between the first infection and the appearance of clinical tuberculosis varies from a few weeks to many years—usually the latter.

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Some Notes on Cancer*

VI. Adrift on the Cancer Literature. Impressions of a Clinician

WILLY MEYER, M.D.
New York

"It is very much to be regretted," said v. Hansemann (1) twenty years ago, "that in modern medical papers the historical study of the literature is going more and more out of fashion. Today, if authors have read the literature of the last five or six years, they believe they have done wonders." Still more bitingly remarked Virchow (2) (p. 7) fifty years earlier that, judging by the manuscripts sent him as containing new matter for publication in his *Archive,* the younger generation of investigators of that period "seemed to be familiar with no more than the literature of the last year."

If in those days of the infancy of the cancer literature and the baby years of biological research it was apparently already difficult for busy medical men to keep abreast of the developments in their profession; if to do so was still more of a problem in the first decade of this century, at a time when Jacob Wolff (3) in his textbook on the *History of Cancer* catalogued ten thousand papers on cancer, what shall we say of the present conditions, of the flood of papers on cancer that is coming from all over the world from almost numberless clinics, institutions of learning, research laboratories and private individuals, medical and lay? Thirty thousand papers dealing with cancer proper would seem to be a conservative estimate of the sum total stowed away in libraries, and, if the ramifications into allied fields were figured in, one could not unlikely bring together as many papers as there are possible combinations of the twenty or so aminoacids: a two followed by eighteen other figures (Abderhalden (4) p. 367).

For the clinician the cancer literature of today is simply engulfing; its study not infrequently makes him groan like the pupil in Faust: As dazed I feel from all this learning, as if in my head were a mill-wheel turning. (*"Mir wird von alle dem so dumm, als ging' mir ein Mühlrad im Kopf herum"*), tempting him to drop the whole matter and turn to studies that are less trying.

But then again there is a wonderful fascination about this groping in the dark, about catching a glimpse of the sky here and a ray of light there, about having by some remote chance remark perhaps a thought kindled in one's own mind, about grasping at straws of confirmatory evidence carried by on the flood, about coming up for the third time—and suddenly stepping on what seems to feel like solid ground.

When finally bottom shall have been touched definitely in regard to the etiology of cancer, it would not be surprising to see in the then accepted theory a berth found for some part of almost everything that has ever occupied the medical mind in respect to cancer, due allowance of course being made for means

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and methods of investigation, or rather the lack of them in the more remote centuries. There have been keen observers at all times, and the deeper one penetrates into the literature on cancer and related subjects, the more firmly one becomes convinced that there is little, if anything, that can be suggested which somebody else has not in some form or other already said or thought or written. Therefore, when in our articles we sometimes seem to stray off at a tangent and here or there have not the quotation at hand with which to back up our remarks, we always feel consoled in the thought that somewhere in the tomes that have become tombs there surely must lie hidden the missing reference, if one but knew just where to put the finger on it.

Looking back at the considerable time we have lost in studying papers of alluring titles that brought no adequate return, and considering on the other hand the number of important papers probably missed that should have been read and would have been read, if guide buoys had been found on the trackless waste pointing the way to them, the desirability seems to stand forth of a large scale, concerted and organized effort to dig out from the cancer literature and to catalogue the papers of real intrinsic value and accompany each title with a line or two indicating the contained essentials. On being swamped by the vast literary flood one cannot help but wish that, in addition to the many associations for cancer research, there should also exist associations for research in the cancer literature, national as well as international.

Similar thoughts were recently expressed by Williams (5) in an address published in the April 7th issue of the Medical Journal and Record of this year. Williams advised the medical students of the College of Physicians and Surgeons of Columbia University in part as follows: "No great advance is ever made by the unaided effort of one man. . . . The kind of contribution to biology we need now is a summarizing of the data. We are all of us at present too close to the great mass of detailed observation to see its broader implications. . . . Gradually, through the efforts of many workers the more essential phenomena will be separated from the incidental, so that it will be possible for one individual to survey the field without devoting so much of his lifetime to the task as to leave no opportunity for that familiarity with the related sciences which is requisite before a generalization can be made."

To "summarize," to "generalize," that is the course we had from the start mapped out for our own work, stipulating only that it should be done from the viewpoint of ordinary medical conceptions, and stipulating further that we would not go out of the way of any difficulty, but rather would make straight for it, try to bring it out into the light and see what could be done with it; otherwise we were to cast ourselves adrift on the literature without any preconceived notion as to whither the currents might carry us.

To generalize is in medicine a kind of literary work that stands by itself. It does not start from results that lead to deductions, but it starts from deductions that lead to results; it is not the description of experimentally ascertained facts that permit of drawing conclusions, but it is the drawing of the essence from manifold conclusions to get at facts; it does not achieve by technic and methods, but it shuns method in order to achieve; it does not require observation, but it requires cogitation; it does not call for the elimination of the personal equation, but for its intense application; it is, as a matter of fact, in every way the antithesis of the descriptive literary work which it distills.

Encouragement to persist in our course has been found in a remark by Virchow (p. 5) in which he puts the historical study of the literature on an equal footing with other methods of medical research in the following words: "May one man try to make headway by the anatomical investigation of disease states, another one by the clinical observation of morbid processes, a third by pathological and a fourth by therapeutic experimentation, this man by chemical or physical, and still another one by historical research, science is so large that it offers room for the unhindered development of all these several courses, if only they know their place, show an inclination to coöperate and do not consider themselves selfsufficient." So we shall continue to set up the nine pins for others to bowl down, if they like. Maybe they will not make a ten strike and leave one or two pins standing, though perhaps shifted a bit from where we had put them. Such an outcome,—should it happen to come to pass, should but ever so little of truth be discovered in our thoughts and points of view—is almost more than we dare hope for.

We have not gone beyond offering thoughts, and have refrained from going into experimenting, partly because there seemed to be no line of experimentation in animals that would cover what we are aiming at, viz., the whole range of cancer questions summarized; and partly because we conceive of such summarizing of the cancer problem from the point of view of ordinary medical conceptions as experimenting, and for that reason this whole series of articles appears as experimentation. This the more so, because these articles do not rest on a generally recognized basis, but on a selfmade foundation, for, paradoxical as it may sound, with all the vast mass of writings on cancer, there is in reality no cancer literature. Every student has first to create for himself his own literature from the unassorted pile before he can get down to real work.

Speaking from experience, should the average clinician embark upon an extensive study of what by courtesy is called the literature on cancer and related subjects, we venture to say, as mentioned above, that it will not be long before it has made him feel dizzy and nonplussed and discouraged, without apparently a redeeming feature about it. For the nature of the literature on cancer is such that, according to inclination, the same thing can be proved black and can be proved white, with plenty of good names to back up either color. But if he perseveres and manages to fight off the temptation to quit, if he does not mind leading the life of a hermit, burning no end of midnight oil and, may be, his own candle at both ends, eventually the time may come when he finds himself in communion with the great minds whose life work has been laid down in the literature, when he rises to thinking through their minds and feels himself lifted to undreamed of, spiritual heights. The joy of such fleeting moments makes up for all the previous gloom. But even this small cup of gladness is not without its bitterness, because if he wants to be

honest with himself, he will have to confess that, like the cancer cell, he is merely passive.

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SOME NOTES ON CANCER

V. On Metastases and Other Distance Effects in Cancer.

Willy Meyer, M.D.

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Fever

GEORGE S. BEL, M.D.,
New Orleans, La.

Fever is undoubtedly one of the most frequent pathological conditions for which the practitioner of medicine is consulted, and upon him devolves the responsibility of determining its causative factor and clinical significance.

Fever may be defined as a host reaction to an injurious agent, in the course of which process the normal physiological function of the heat regulating mechanism becomes altered. We must not regard fever as a result of increased heat production but rather as a retention of heat; in other words, it is a condition in which the function of the heat regulating centre is disturbed. During hyperpyrexia, the body gives off more heat than it does normally, but dissipation is not proportional to production, therefore the temperature of the body rises.

While bacteria or their products are by far the most frequent cause of this pyrexial reaction, they are not the sole cause; other organic and inorganic poisons may occasion fever. In addition to disturbances of the heat regulating mechanism, any excessive activity or increased function of body tissues occasions more heat production *per se.* Thus, all inflammatory responses, immunity production, and tissue proliferation that have to do with repair, may of themselves cause the body temperature to become elevated. Such increased activity on the part of somatic tissues, combined with disturbances in the heat regulating centres, seems adequately to explain the occurrence of fever. Since fever is a process concerned with heat production, it is generally agreed that during its course oxidation is increased; carbohydrate metabolism is rapidly depleted; water is retained in the tissues; salt excretion is frequently reduced, and the metabolism of other substances undergoes alteration. There is also a constant destruction of tissues which gives rise to an autopoison, thereby increasing the disturbances to the tissue complex.

Fevers for the purpose of diagnosis may be classified clinically as of short and long duration, and these may be further subdivided into fevers that are intermittent and remittent. We may also speak of infectious and noninfectious fevers. With regard to fevers of short and of long duration, we usually consider a fever that lasts not more than two weeks as one of short duration, and one that lasts for a longer

period, whether it intermits or remits, as a fever of long duration.

On the basis of etiology it is erroneous to state that any specific microorganism or its poison produces a fever of short or long duration, since it is a well known fact that the same microorganism may at one time give rise to a fever of short duration and at another time to a fever of long duration. To elucidate this point we may call attention to that common injurious agent, the streptococcus, which under certain conditions of localization after tissue invasion, gives a fever of short duration, whereas when its invasion is generalized, the fever is usually of long duration. The same can be noted with practically all of the pyogenic microorganismal agents. Generally speaking, it is the rule that injurious agents which occasion exudative host reaction cause fevers of short duration, while injurious agents which give rise to tissue proliferation as the main host reaction cause fevers of long duration. For example, the staphylococcus, Bacillus pestis, Bacillus influenzæ, Bacillus diphtheria, the pneumococcus, the gonococcus, the meningococcus, are all pyogenes producing an acute inflammatory reaction; the fever in these infections is of comparatively short duration. On the other hand, bacillus tuberculosis, Bacillus lepræ, Bacillus typhosus, Treponema pallida, the blastomycetes, are injurious agents exciting tissue proliferation; here the occasioned fevers are of long duration. In the exanthemata, the fever may be of short or long duration, depending upon a number of factors. If it is a pure infection, the fever is of short duration; in the event of complications which so often occur during the course of such conditions, the fever may become one of long duration even when the complication is the result of secondary pyogenic infection. Thus, uncomplicated measles runs its course in eight or ten days; when the disease lasts longer than this it indicates a secondary superimposed infection, usually of some part of the respiratory tract. Further, this common complication of measles may induce toxic alterations in important internal organs such as the kidney, with a resultant continuing fever.

It may be stated as a guide for practitioners of medicine that the common infections that occasion fevers of short duration are as follows: Exanthemata (uncomplicated), all pyogenic infections, particularly when localized, such as acute bronchitis, acute tonsillitis, acute pharyngitis, diphtheria, erysipelas, appendicitis, and pelvic infections. Here it must be recalled that there are certain pyogenic infections that give rise to fever of short duration even where there is a general blood stream infection at one time or another during the course of the disease; as such examples we may mention certain of the pneumonias, pneumonic plague, glanders, etc.

It is not necessary to lay much stress upon fevers of short duration as their characteristic course and salient symptoms enable the physician to make a reasonably sure diagnosis. However, occasionally, accuracy of diagnosis is difficult in such fevers, but fortunately for the patient and clinician, host immunity as a rule is quickly established and recovery promptly occurs.

The fevers of long duration are tuberculosis, certain forms of sepsis, typhoid fever, paratyphoid fever, meningitis, acute rheumatic fever, syphilis, leprosy, malaria, malignancy, endocarditis, leucemia, and actinomycosis.

Here I deem it important to call attention to the erroneous conception of the term sepsis, as so frequently alluded to by the clinician. Sepsis always implies a blood stream infection, one in which the injurious agent is multiplying and elaborating its poisons in the circulation. In reality it is a bacteremia. We must bear in mind that the specific injurious agent even in such localized infections as a single furuncle is from time to time accidentally entering the blood stream. As a rule these rather sparse microorganisms are readily destroyed by the normal lytic substances which play such an important part in host defense. Sometimes they are only inhibited from multiplying while in transit through the circulation and lodge in distant parts, there to complete their life cycles and set up further inflammatory changes. Most of the cases of endocarditis are familiar examples of secondary lesions in remote parts, the result of survival of the microorganisms during blood stream transportation.

Malignancy.—Certain neoplastic invasions give rise to a febrile state which lasts over a period of months and for this reason, neoplasms have been classified as causative agents of fevers of long duration. Early in malignancy, it is unusual to have fever. When malignancy *per se* produces temperature, it is the result of the absorption of noxious products from the degenerating neoplastic mass. These products are rarely ever in sufficient quantities or of such high toxic property as to occasion more than a slight elevation of temperature. Furthermore, such temperature rises are intermittent in character for the reason that there is not a continuous discharge and absorption of the products of disintegration. Later, when pyogenic infection occurs in the tumor mass, practically constant temperature is the result.

Leucemia.—The fever existing in the leucemias, both myeloid and lymphoid, is, in the light of our inadequate knowledge of the etiology of such conditions, explained on the same basis as is the fever seen in malignancy; it is assumed there is great destruction of cells with subsequent absorption of disintegrated products.

Tuberculosis.—Of all the fevers of long duration, that caused by tuberculosis is likely to give the physician the most concern, since, so often, the infection is insidious and presents a low grade temperature, intermittent in type. In such a condition, especially where there are no definite physical signs and little or no expectoration, without demonstration of acid fast bacilli, incorrect interpretation of the complex is not uncommon. Here a careful and accurate history and intelligent valualization of the clinical symptoms is of extraordinary suggestiveness, and always of utmost importance in allowing us to arrive at an early diagnosis. This, reinforced by repeated careful physical examinations and such laboratory aids as x ray examinations, complement fixation test, tuberculin reactions, and animal inoculations always render an early accurate diagnosis comparatively simple. Hilal tuberculosis, especially in the young, is a condition very often overlooked because not suspected. Local signs are sometimes absent and when present frequently require manipulative skill for their detection on physical examination. It is here that the technical

skill of the röntgenologist so frequently determines accurately the position and extent of the tuberculous lesions. It has been my experience to observe not infrequently continued fever in children, with incrimination of nasopharyngeal or tonsillar infections, and even pyelitis as the etiology, when careful study would disclose hilal tuberculosis. So also it is important to call attention to renal tuberculosis, a morbid process so frequently overlooked and at times surprisingly difficult to diagnose. Persistent frequent urination without bladder disturbance is always suggestive. Here, discovery of tuberculous lesions elsewhere, such as in testes or prostate or lung; finding tubercle bacilli in the urine; localization of lesions by cystoscopic examination, and in some instances the tuberculin test, are all valuable diagnostic aids.

Septic conditions.—Of the septic conditions that cause fever of long duration it is essential early to determine their etiology and the location of the offending foci. The etiological factor can sometimes be determined through repeated blood cultures and by examination of the body fluids for specific immune bodies. As to the location of the focus responsible for the process, the various cryptic infections occurring in the upper respiratory tract, the alimentary tract or the genitourinary tract, should be carefully considered and all modern methods employed as an aid in arriving at a diagnosis.

Deep seated suppurative foci give considerable trouble at times. Perinephritic collections of pus, retroperitoneal and subphrenic abscesses in my experience are offending foci usually difficult of diagnosis and should always be considered when dealing with continued fever of determined origin.

Endocarditis.—In infectious endocarditis, either socalled malignant (usually gonococcal) or otherwise, it is essential in order to arrive at a diagnosis to locate the source of infection, since in nearly all cases the endocardial lesion is secondary or metastatic. Even in old chronic valvular defects where the acute lesions develop, the excitants have usually been transported from some new and distant focus of infection. In subacute infectious or bacterial endocarditis we have a condition of long duration and one remarkable for its latency. For weeks the patient may be free from signs and symptoms, or the only noticeable symptoms may be the continuous daily rise of temperature, even though slight. If the attack is mild in type, the patient may keep about and even attend to his work. Here blood cultures are frequently negative, but several should be made. As the disease progresses, fever increases and the patient may have chills, sweat, anemia, and painful splenomegaly due to infarcts. The blood shows a leucocytosis and secondary anemia.

Typhoid and paratyphoid.—Typhoid and paratyphoid infections, with their classical pictures and cardinal diagnostic prodromal signs, make many cases remarkably easy of diagnosis. The early recovery of the causative organism from the blood stream or the later demonstration of antibodies in the tissue fluids (Widal reaction), naturally make the diagnosis positive. In the absence of positive laboratory findings such as culture or Widal, and with one or two clinical symptoms present positive affirmation of the existence of one of these enteric infections is not possible, and one should be cautious in such cases in making a diagnosis dependent entirely upon clinical picture and course. It is well to bear in mind that a leucopenia with a relative increase in the number of lymphocytes is usually present in the early stages of typhoid but disappears as a rule upon the full establishment of the intestinal lesions, as then secondary infection complicates the host resistance and response.

Syphilis.—In syphilis, the history of infection, the objective signs such as skin lesions, enlarged glands, mouth and throat lesions (patches, ulcers, perforated hard or soft palate), the demonstration of Treponema pallida in lesions and the Wassermann reaction are always important diagnostic aids. In cases in which the history is negative and objective signs are absent, we must rely practically solely on the laboratory examinations, especially those of the blood and spinal fluid.

Rheumatic fever.—In rheumatic fever, the history of sore throat (tonsillitis, pharyngitis), the sudden onset, the involvement of the large joints in succession, and profuse acid sweats are characteristic. The blood shows a leucocytosis and in some cases the causative agent may be recovered by culture methods.

Malaria.—Malaria is one of the conditions to be eliminated in the face of a long fever either remittent or intermittent. With the clinical picture of rigors and temperature occurring at regular intervals, the acute type of infection either tertian, quartan, or estivoautumnal, can be readily suspected. The chronic form, especially aestivo autumnal, presents greater difficulty, as here the rigors may be entirely absent and the temperature quite atypical. Demonstration of the parasites by means of stained blood films naturally establishes a diagnosis. However, it must be remembered that often in the chronic type the peripheral circulation is free from parasites and resort must be had to splenic puncture in order to secure proper material for diagnosis. Black water fever as a type of malaria, with its usual splenomegaly, generally presents no difficulty at diagnosis, although its successful treatment is usually difficult.

Noninfectious fevers.—Noninfectious fevers are those that, as far as we know, are not produced by living injurious agents or their poisons. They are caused by such products as inorganic and organic (nonmicroorganismal) poisons. Brain injuries, cerebral hemorrhage, burns, Graves's disease, are such examples. In all of these, fever is produced by little understood foreign substances that may be regarded as autointoxicant.

CONCLUSIONS

In conclusion, I want to call attention to the fact that the determination of the etiology of long fevers produced by microorganisms and their poisons is often of paramount importance from the viewpoint of possible chemotherapy, serotherapy, and vaccinotherapy; for example, in streptococcus septicemia, vaccines or antitoxins are indicated (vaccines and serotherapy). In malaria, the detection of the parasite in the circulation calls for the administration of quinine (chemotherapy); in meningococcal meningitis, the determination of the cause permits the prompt administration of antitoxin (serotherapy).

Hibernia Bank Building.

Some Clinical and Pathological Findings in Disorders of the Rheumatic Group*

VINCENT COATES, M.A., M.D. (Cantab.), M.R.C.P. (Lond.)
Bath, England

The well known researches of Poynton and Payne are the foundation of the bacterial theory of rheumatic fever and there is now a growing conviction among pathologists that streptococci of low grade virulence akin to those found normally in the alimentary tract are the organisms responsible. What has been understood as conflicting evidence and vitiating the findings of Poynton and Payne is the fact that many observers have failed to find the Diplococcus rheumaticus, while some experimenters have been able to repeat the performance of Horder in producing lesions similar to those found in man by animal inoculation of streptococcus faecalis.

Costa and Irish, however, have cultivated diplostreptococci from subcutaneous rheumatic nodes, while no observer has succeeded in demonstrating experimentally that organisms other than streptococci can produce the type of lesion so well illustrated by the periendomyocardial subcutaneous and joint synovial lesions, characteristic of rheumatic fever. On the other hand Carey Coombs (1) in his Long Fox lecture and again with Geoffrey Hadfield (2) has pointed out that the essential difficulty in reproducing in animals cardiac lesions faithfully mimicking those of man, lies in the fact that experimentally, organisms are introduced into the circulation and therefore into the heart in a different manner to that which obtains in human rheumatic infection.

FIG. 1.—Rheumatic fever. Valvular endocardium. Section of "vegetation" of acute rheumatic endocarditis. A nodule of inflammatory cells lies beneath the valvular endocardium. Its histological characters are essentially those of the nodule found in the myocardium and mural endocardium. At one point the stretched endothelial lining has ruptured and a protective mass of fibrin lies over the rupture.

A further important consideration is the impossibility in animals of exactly reproducing conditions of heredity, environment and other factors predisposing towards the lowering of immunity, which conspire in man to make him susceptible to organisms reverting from saphrophytic citizenship to the rôle of profiteer: otherwise every breach of the alimentary mucous membrane would result in not only penetration of a jumping off party of streptococci, but consolidation of these. It is in experimental animals as in man a history of many offensives, but few objectives gained. Neither in man nor in animals is it possible to estimate the bogey for the course.

Poynton and Payne, Poynton and Still, Aschoff and Carey Coombs have been able over the course of time to show that the tissue reaction occurring in rheumatic fever is constant, that is to say that the pathological pattern is absolute whether the lesions occur in the heart joints or subcutaneous tissues. The essential pathological features are to quote Carey Coombs (1) "those of a proliferative reaction characterized especially by the formation of giant cells with a mild leucocytosis on a background of fibrin. Foci of this kind are found not only in the myocardium but also in the rheumatic valve, pericardium and joint while the subcutaneous node so characteristic of rheumatic infection is only the submiliary nodule writ large."

Regarding rheumatic fever as a de luxe edition of the smouldering rheumatic infection of childhood, and arguing on analogy, it was thought likely that in the same way that the cardiac vegetations had subcutaneous homologues, so might the submiliary nodules also be represented. And in point of fact these have been found (3); small gritty granules barely discernible from the normal, which represents a subpalpable phase of the infection. These occur at sites exposed to friction and are most easily palpated along the ulnar borders and over the vertebral spines. The accompanying photomicrographs of such a nodule in a case suggesting rheumatic infection but as yet without other physical signs shows the same tissue reaction as that which occurs in well established rheumatic lesions.

An investigation with Dr. R. E. Thomas (4) yielded the fact that a large number of children who give the history of growing pains, stiff necks, sore throats, etc., have such nodules which indicate that the barriers of immunity are being assailed with minor success; for we can conceive rheumatic fever as the complete breakdown of the defense mechanism used against the invasion of alimentary streptococci whenever immunity is lowered, either by virtue of heredity or by the correct assembly of factors as yet improperly understood—pieces in a jigsaw puzzle as it were—stress, damp, lack of sunlight, failure of the iodine metabolism, etc.—somewhat like the rhachitic mosaic, calcium phosphorus imbalance, deficiency of vitamine and the domestic complex; whereas a smouldering infection is a partial dislocation of such a service.

Turning now to the question of arthritis of the rheumatoid variety one is impressed on reviewing certain types in a large series of cases by the frequent history obtained either of rheumatic fever or "hav-

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Fig. 2A

Fig. 2B

Fig. 2-a, and Fig. 2-b.—Rheumatic fever, Subcutaneus node. Sections of a relatively large lesion arising during the acute stage of the disease in a child. The lesion is in a fairly early phase. A mass of autolysing fibrin occupies the centre, (C) The intermediate zone is composed of inflammatory cells. (I) The peripheral zone, of granulation tissue in which at a later stage large numbers of young capillarics arise (P).

ing just escaped rheumatic fever," which is in accord with the findings of those observers (5) who make the percentage of cardiac lesions occurring in such cases round about the region of twenty: and by an antecedent history of physiological or pathological stress, damp and so on, comparable to conditions proved to exist in the case of the rheumatic child. Moreover, in addition to the occasional occurrence of large subcutaneous nodules clinically comparable to the classical nodule of rheumatic fever, the millet seed granules already referred to as occurring in rheumatic children can be found with comparative frequency at the same sites as in the latter and also about the joints. In a paper (at press) with Dr. Carey Coombs on subcutaneous nodules sections are shown of nodules removed from cases of arthritis of the rheumatoid type including Still's disease.

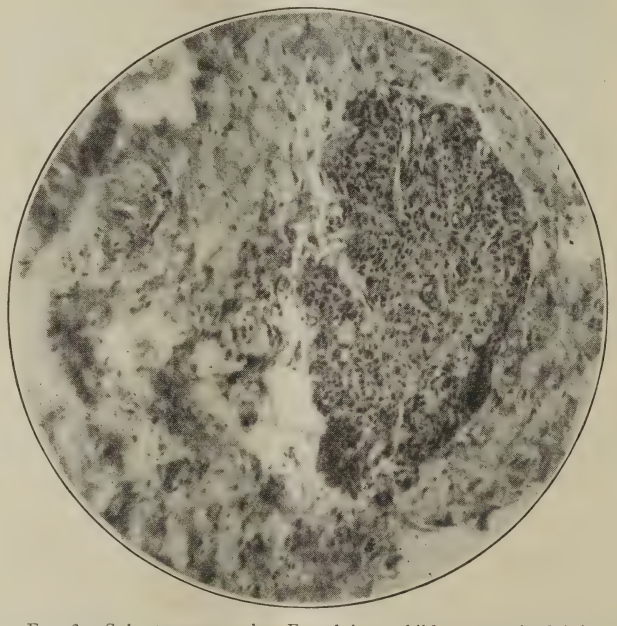

Fig. 3.—Subcutaneous node. Found in a child suspected of being rheumatic but who was afebrile and had no signs of organic cardiac disease. The lesion, only just palpable, has, in miniature, all the characters of the larger lesions found during the acute phase of frank rheumatic infection. It is sharply circumscribed and rich in newly formed capillaries.

The following are clinical notes of two cases, rheumatoid arthritis and Still's disease with photomicrographs of sections of large subcutaneous nodules removed from each:

Case I.—An unmarried woman of thirty-six. Onset of arthritis insidious, five years ago. History of scarlet fever in childhood. First seen three years ago when Ewald's test meal showed achlorhydria. Relapse two years ago. Fusiform joints, enlarged spleen and glands, relative and absolute lymphocytosis with secondary anemia. Absolute achlorhydria by fractional test method. Irregular pyrexia with a clinically undamaged heart but large subcutaneous nodules.

Case II.—A school girl of thirteen. Six months' insidious onset of arthritis. History of growing pains, etc., but no rheumatic fever or chorea. Bronchitis with some root and generalized fibrosis. Fusiform joints, enlarged spleen and glands, relative lymphocytosis and secondary anemia. Irregular pyrexia and an enlarged heart without valvular leakage. Large subcutaneous and millet seed nodules.

Pathologically, therefore, following a clinical lead we are forced to the conclusion that the lesions both of rheumatic fever and the smouldering rheumatic infection of childhood, and certain forms of rheumatoid arthritis are produced by an infection, giving rise to an identical tissue reaction.

The only tissue reactions which bear a superficial resemblance to those described above are found in

gout and syphilis. Sodium biurate crystals in frozen sections eliminate the former, while universal specific endarteritis and periarteritis are distinctive enough to eliminate the latter.

From the clinical viewpoint is this feasible? It would appear to be so. It is notorious that the clinical manifestations of many specific infections are protean and ubiquitous. Compare the different sites of attack by the Spirocheta pallida: neuropathic (selective at that) visceral, cardiovasculorenal, joint

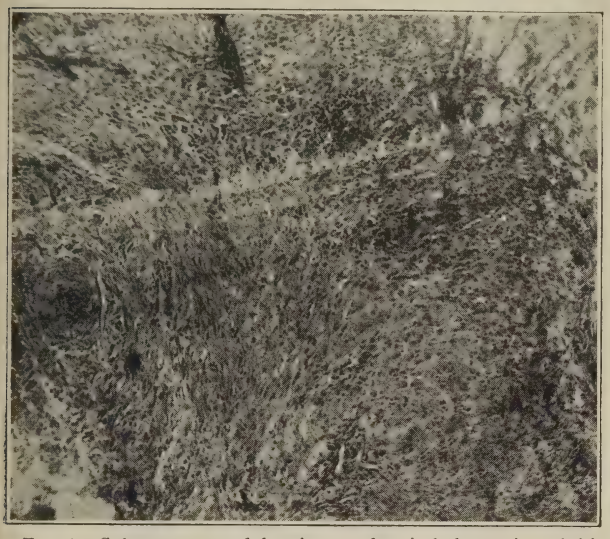

FIG. 4.—Subcutaneous nodule. A case of typical rheumatic arthritis with enlarged spleen and glands and achlorhydria. A central mass of necrotic tissue which has become hyaline, surrounded by a fibrocellular zone.

and bone. If therefore certain individuals have certain susceptibilities in respect of vulnerable spots in one disease, it is not unreasonable to suppose that this holds good for other diseases. That the reaction is more exuberant in one than in another individual is in keeping with the syphilitic simile.

Of what value then is a constant tissue reaction in the diagnosis of this type of infection?

In the large majority of infections produced by a known microorganism the tissue changes are constant and specific. The histological features of tuberculous infection are established as a routine method of diagnosis, and similar clear cut specific histological pictures accompany such diverse infections as amoebic ulceration of the bowel and gonococcal salpingitis.

In the present state of knowledge we are still without any reliable evidence that streptococcal infection gives rise to the formation of antibodies which can be used to demonstrate in a truly specific manner any known immunity reaction; and we are driven to the study of tissue response and histological criteria in the diagnosis of these infections, as it is now the custom of election to use this method in extra pulmonary tuberculosis.

SUMMARY

The bacterial theory of rheumatic fever has been briefly touched upon. The chief points in favor of an alimentary streptococcal infection appear to be the specificity of the tissue reaction irrespective of the site affected, in man: the occasional mimicry of similar lesions produced by experimental inoculation of streptococci, in animals: and the absence of such lesions as the result of other infections in both man and animals.

Be this as it may, sections of millet seed nodules in rheumatic children as yet without clinically demonstrable cardiac lesions, sections of large subcutaneous nodules in rheumatoid arthritis and Still's disease, have been shown to illustrate the same pathological pattern as that which is characteristic of rheumatic fever, with the obvious inference that the virus is a common one.

In addition the finding of millet seed subcutaneous nodules and a similar history of stress, damp, or lack of sunlight, known to exist in rheumatic children, with the not infrequent history of rheumatic fever in certain types of rheumatoid arthritis, suggests a clinical link between these conditions.

I wish to thank Dr. Carey Coombs, physician to the Bristol General Hospital, for allowing me to use the pathological material contained in the first part of this paper and for his permission to express in part some mutual work on rheumatic nodules.

My special thanks are due to Dr. Geoffrey Hadfield, pathologist to the Bristol General Hospital, not only for sectioning and microphotographing morbid material and for his skilled reports without which it would have been impossible to proceed but also for his valued criticism and advice.

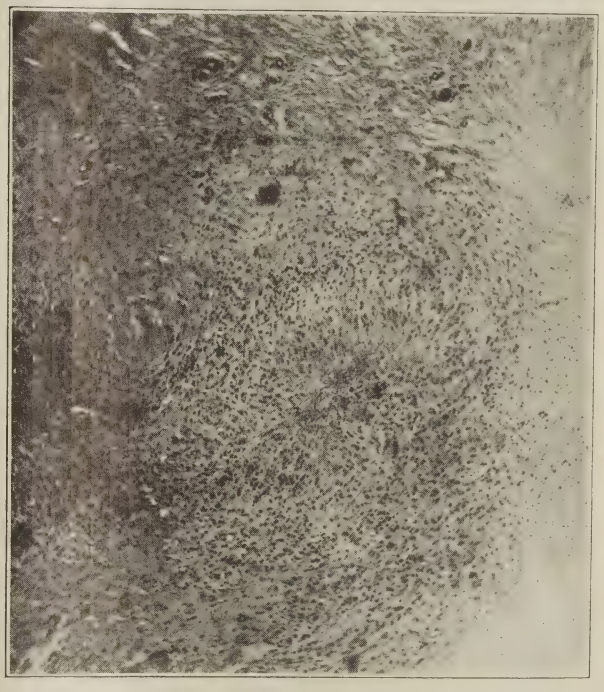

FIG. 5.—Still's disease. Subcutaneous nodule from a typical case showing fusiform joints with enlarged glands and spleen. Central necrosis with peripheral fibroblastic reaction as in the subacute phase of frank rheumatic infection.

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The Possibilities of Error When Diagnoses Are Based Solely Upon Anamnestic Records*

HENRY J. JOHN, M.D.

Cleveland, Ohio

A subjective history of the patient and his ailments is a very essential factor in making a diagnosis but the objective evidence is infinitely more important. This fact, and the danger of overlooking the symptoms of one disease, particularly if they are overshadowed by those of another, are clearly brought out by the following two cases:

Case I (167,725).—A young girl, eighteen years of age, came to the Clinic June 3, 1926, complaining of drowsiness, excessive appetite, polydipsia, polyuria with nocturia, and pruritus vulvæ. These symptoms were of two months' duration and, since they simulated so closely the usual symptoms of diabetes, she and her friends had become convinced that she had this disease and she had therefore sought medical advice.

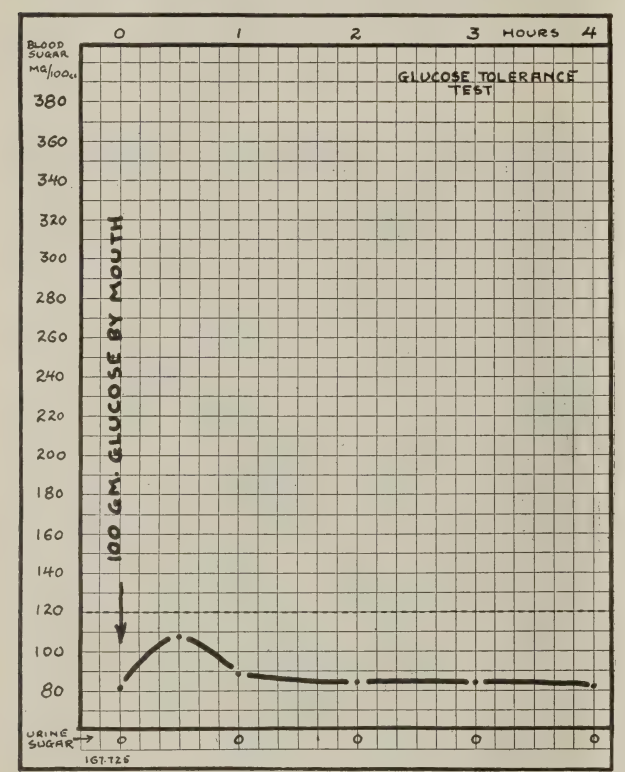


Fig. 1.—Chart I. (Case I.). Result of glucose tolerance test made in the case of a patient who complained of polyuria, polydipsia, nocturia and pruritus vulvæ. Note the supernormal carbohydrate tolerance. This test ruled out the diagnosis of diabetes in spite of the presence of typical symptoms of the disease. If the test had not been made diabetes would doubtless have been the diagnosis.

Physical examination revealed a well developed and well nourished young woman, five feet six inches in height, weighing 118 pounds, with a pulse of 60 and blood pressure of 110/70. Physical examination revealed nothing of importance. The red blood count was 4,470,000, white count 7,300, hemoglobin eighty per cent. A blood sugar examination made on the same day showed a blood sugar value of 82 mg. per 100 c. c.; the blood Wassermann test was negative; urine examinations made on two successive days showed no sugar, a faint trace of albumin in the first examination, but none in the second. On June 7th a glucose tolerance test was made. During the test the water intake was 850 c. c., the urine output 490 c. c.; plasma chlorides 585, blood urea 15, blood uric acid 1.7, blood creatinin 1.1 and nonprotein nitrogen 50.4 mg. per 100 c. c. The results of the test, as shown in Chart I, indicate clearly that the patient did not have diabetes—in fact her carbohydrate tolerance was above normal.

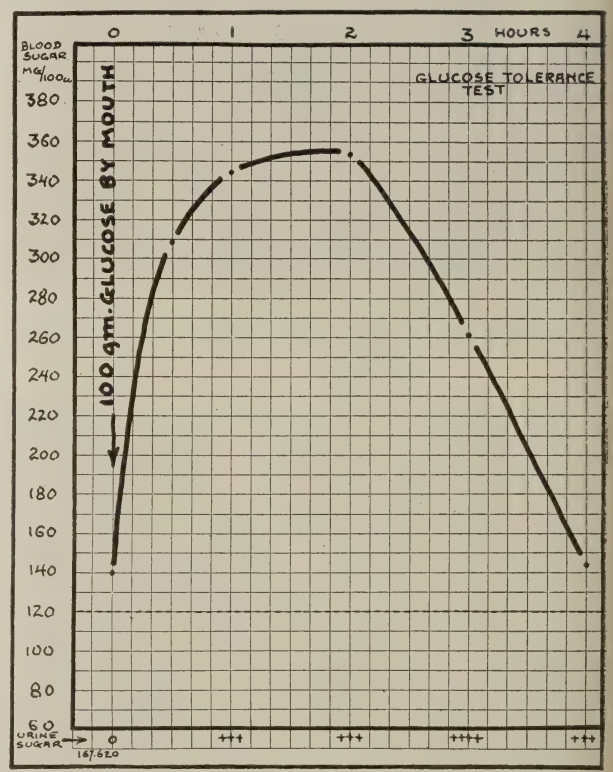


Fig. 2.—Chart II. (Case II.) Result of glucose tolerance test made in the case of a patient who had a severe case of hyperthyroidism (B.M.R. +82). Glycosuria was present but the postprandial hyperglycemia was very slight (134 mg. per 100 cc.). Note the very low carbohydrate tolerance. This test betrayed a diabetic condition which would have been overlooked if the test had not been made.

Case II (167,620).—A woman fifty-eight years of age. She came to the Clinic because she had a goitre and because she was suffering from nervousness, palpitation of the heart, loss of weight (thirty-three pounds in six months), hyperhidrosis—all of these being typical signs of toxic goitre. She had noticed a fullness in the throat for four or five years; the other symptoms had been present from six to eight months. For six months she had been practically bedfast.

Physical examination revealed a thin, tall woman,

*From Cleveland Clinic.

weighing 115 pounds, which was thirty-three per cent. less than her normal weight. Her temperature was 99, pulse 140, blood pressure 209/100.

There was a bilateral, firm, diffuse, irregular enlargement of the thyroid gland. The chest was clear, the heart was not enlarged, there were no thrills or murmurs. An examination of the abdomen and pelvis revealed nothing of importance except for a prolapse of the rectum with hemorrhoids.

The urine examination showed a heavy glycosuria, a faint trace of albumin, no acetone. The blood sugar was 134 mg. per 100 c. c., four hours after a meal. The blood Wassermann was negative.

A blood sugar content of 134 mg. per 100 c. c. four hours after a meal would hardly catch anyone's attention, as such a figure is so close to the normal that one would be apt to disregard it; however, the fact that glycosuria was also present led us to make a further investigation and a glucose tolerance test was performed on June 8th, the results of which are represented in Chart II. During the test the water intake was 850 c. c., the urine output 270 c. c.; the sugar intake was 100 gm., the sugar output 4.06 gm.; plasma chlorides 585, blood urea 39, blood uric acid 1.4, blood creatinin 1.0, and nonprotein nitrogen 42 mg. per 100 c. c. The test showed definitely that a diabetic condition was present, although the patient had no diabetic symptoms. Because of the severe hyperthyroidism—she had a basal metabolic rate of plus 82 per cent.—the diabetic condition might have been entirely overlooked if the glucose tolerance test had not been made.

DISCUSSION

In these two cases we have a striking contrast. In the first there was a history of typical diabetic symptoms in the presence of a nondiabetic condition; in the second case there was no history of diabetic symptoms, although a definitely diabetic condition was present.

These cases show clearly how misleading a history of the patient's symptoms may be and how easily a mistaken diagnosis might be made or a serious complication overlooked, were we to base our final judgment on this history and not obtain sufficient objective evidence of the true status of the patient. Even glycosuria in the presence of hyperthyroidism is not considered very abnormal, in fact it is generally considered to be a fairly common accompaniment of the condition. It is impossible to tell how many cases of diabetes have been missed for this reason, as no one has followed up such a group of cases systematically, in order either to confirm or definitely to rule out a diabetic condition. In the milder cases, those in which the disease has caused only an impairment of the carbohydrate tolerance, the symptoms doubtless clear up after thyroidectomy. In some of the more severe cases, however, diabetes probably develops later in life, but the fact that it was initiated during the attack of hyperthyroidism is doubtless not recognized. In order to avoid this danger it is imperative never to disregard the presence of glycosuria in a case of hyperthyroidism, even if there is but a moderate degree of hyperglycemia.

2091 Lamberton Road.

Gastrointestinal Diverticula*

WILLIAM SEAMAN BAINBRIDGE, Sc.D., M.D., C.M.
New York

(*Concluded from page 323*)

Case XI.—A. G.; female; fifty-four years of age; married. This patient consulted me August, 1922, following a laparotomy which had been performed by a surgeon in another city four months earlier. This surgeon had pronounced the condition found ("a tumor of the upper rectum as large as an orange") as irremovable, and had simply closed the wound.

After thorough examination I decided that the condition more closely resembled that of diverticulitis, or of an abscess, than carcinoma. Medical care was instituted and the patient advised to postpone operative procedure. Gradually she began to improve and by December, 1922, had gained five pounds.

January, 1923, I was called in consultation by her physician who reported that the mass in the left pelvis was as large as an orange and the patient had a temperature. I diagnosed the condition a pelvic abscess and advised operation. The following day the patient ruptured the abscess into the bladder, and passed seven or eight ounces of pus. Following this irrigations were instituted, and at the end of a month the patient was convalescent and the mass had practically disappeared. However, many of the intestinal symptoms were still evident and exploratory laparotomy was advised.

April, 1923, on opening the abdomen, the great omentum was found to be adherent to the abdominal wall. The great omentum and the transverse colon were adherent to the uterus, anteriorly, and to the left broad ligament and to the bladder. These were carefully separated, and a hole was found in the bladder, about the size of the end of the index finger. This was turned in with interrupted stitches. From the opening into the bladder there was a tract extending in a circuitous way to the pelvic colon at the site of which appeared to be the remains of a diverticulum. Evidently a pelvic abscess had formed from a diverticulum of the sigmoid and discharged into the bladder.

The lower part of the small bowel was adherent and markedly fixed in position, and twisted by adhesions between it and the fundus. The appendix which was twisted was removed in the usual way. There were other small diverticula along the sigmoid. These, however, were not causing trouble and did not require surgical treatment.

The patient had a rather stormy convalescence, due

*Read before State Medical Association of Texas, May 26, 1926.

to her badly run down condition, but in October, 1924, she wrote that she was in fine health. A more recent letter, April, 1926, indicates that the patient is leading an active and normal life and that the corrective surgery of the intestinal tract has entirely eliminated the socalled irremovable carcinoma. There has been a gain of forty-five pounds in weight since the operation.

Case XII.—P. T.; female; fifty-five years of age; married. Five years previous to consulting me this patient had had severe spasms of pain across the abdomen, after every meal, and on one occasion had vomited bright red blood after eating. Her condition grew worse gradually until she was unable to take any solid food, and her weight fell from 175 to 137 pounds.

The patient did not improve under medical treatment and finally it was decided to resort to operation.

Laparotomy was performed April 16, 1926. The "last kink" was markedly developed. In spite of a thorough clearing out with oil and colonic irrigations for days previous to operation, there were scybalous masses of feces in the loop of the pelvic colon. None of these masses was below this loop of the gut. A pericolic sigmoid band was cut transversely and sewed longitudinally. The appendix contained enteroliths, and was removed.

There was a band attached to the fold of Treves[1] which twisted the entrance of the ileum into the large gut, when the patient was in an upright posture. This band was corrected and the fold of Treves freed. There was a large, diverticulated, mobile cecum. This was treated with iodine; plicated and fastened to the right posterolateral shelf at the level of the lower pole of the right kidney. A number of bands along the ascending colon (Nature's ineffectual effort to hold the gut in place) tended to constrict the bowel; these bands were bisected and the raw surfaces were allowed to remain in the pocket thus made in the right flank along the ascending colon (a modified method of Waugh of London). The gallbladder was surrounded by adhesions and adherent to the duodenum and the gastrocoloc omentum. The gut was detached from the gallbladder and the raw surfaces of the gallbladder covered. There was a small diverticulum at the apex of the gallbladder where, by traction, the bowel had elongated the tip, the rest of the organ being held in position by adhesions.

The pylorus was somewhat narrowed and a posterior gastroenterostomy was performed with an opening large enough to admit four fingers. There was a distinct scar and an indentation of the posterior superior aspect of the first portion of the duodenum. This was carefully outlined and a pursestring stitch of linen was placed around an area on the anterior wall just above the posterior ulcer. A red hot cautery was used to go through the anterior wall and into the ulcer; a finger was held under the ulcer as the cautery was used to prevent perforation of the under surface of the gut. The pursestring was tied and reinforced. The diverticulum of the gallbladder was enfolded.

[1]George F. Chandler, as a routine measure in all cases of appendicitis which are not gangrenous, places an artery clamp on the ileal side and another on the caecal side, and with a pair of scissors cuts right through to the junction of the ileum with the caecum, thus freeing the fold of Treves and removing the interference with the proper function of the valve.

The above case is too recent to permit of postoperative deductions. It is reported, 1, because of the unusual site of the diverticulum (gallbladder); and 2, to emphasize the importance of differential diagnosis in cases where, because of extensive pathology of the intestine, malignancy might be readily suspected.

Briefly summarizing what we know today of intestinal diverticula, it is evident that while some are congenital, a far greater proportion are acquired. While the etiology of diverticula is obscure, the acquired type may, frequently, be traced to a traumatism, an inflammation (sometimes a combination of these two); or to a persistent excessive distention (evolutionary type) of the gut, due to retarded drainage. In the latter case a continuous abnormal strain is placed upon a (possibly weakened) point in the intestinal wall until, eventually, evolutionary changes take place. Accumulation of hardened feces is greatest in the sigmoid where diverticula are frequently found, and a point which Lynch and Felsen report "is a site so favorable for the development of carcinomatous tumors."

From the therapeutic viewpoint, intestinal diverticula may be divided, roughly, into three main groups:

1. There are the small multiple diverticula which evidence no symptoms. These are of little importance in the scheme of things, and usually may be disregarded.

2. There are the acute types of diverticula—with abscess formation; with diverticulitis; or with degenerative, possibly malignant, change. These may be recognized and must be treated surgically.

3. Most important are the considerable group of diverticula which constitute the main factors in many pathological conditions—conditions where the effect is not well correlated with the essential cause. These intestinal diverticula of the colon are selective points for the retention and absorption of toxins from putrefactive bowel content and as such are, doubtless, often the underlying but unrecognized causative factor in many remote toxic symptoms—abnormal heart, thyroid and mammary conditions, premature senility of the organs and certain psychoses. When all likely sources of infection (teeth, tonsils, gallbladder, etc.) are being considered, the possibility of the foci occurring in these pockets—diverticula—of the gastrointestinal canal should be thoroughly weighed. Unless all possible infective sites of the gastrointestinal tract are investigated as a routine measure, wherever there is an unidentified evidence of toxemia, the patient may be dead long ere the local toxic area is defined and eliminated.

Careful clinical and laboratory observation will usually demonstrate gastrointestinal diverticula. In this connection may I add a word concerning the clinical examination of the patient with gastrointestinal symptoms? Often such a patient, whose intestines have been thoroughly cleaned out by purgatives and irrigations and are, as a result, flaccid and flabby, is placed on the examining table in a prone position. It is due to this method of examination that many mechanical defects of the intestines escape the diagnostician. These patients should be examined in an upright posture in which case the viscera will be in their natural positions and relation to each other. Often placing the patient in a modified Trendelen-

burg position during examination will reveal conditions demanding attention.

In beginning diverticula—before the resilience of the gut has been permanently impaired—therapeutic measures sometimes prove beneficial. A properly fitted belt may correct the tendency of the viscera to downward displacement, lessen the angulations and, eventually perhaps, strengthen the abdominal supports, with final mechanical readjustment of the organs. Paraffin oil (to keep the feces soft); biweekly doses of barium or bismuth, one ounce in emulsion or buttermilk, and, where there is spasm of the colon, luminal may prove useful measures.

Cases of intestinal diverticula with symptoms practically always require surgery—the amount to be determined by individual need. There is a wide range of opinion regarding the type of surgical procedure required. Roberts and Drueck believe that diverticula (of inflammatory type) may be relieved by medical measures. Lynch states "that the treatment of diverticulitis should be conservative" and adds "that when acute abscess occurs, the same treatment applies as in any other part of the abdominal cavity." Erdmann believes "that the acute types (diverticulitis) call for drainage, or excision and suture as does appendicitis." Mayo (W. J.) states "that if a considerable size tumor is present and the symptoms do not show a tendency to disappear, it is better to make a primary resection of the bowel before abscess and fistula supervene to render the patient a prolonged invalid." Where diverticulitis is a factor, Kelly isolates the diverticulum; ligates the mesentery, if present, and the diverticulum, "keeping the bowel wall well elevated, and pinched together to prevent any escape of the contents."

In my experience I have found that these diverticula of chronic type are of great importance. They may be eliminated, in many instances, by such simple surgical measures as cutting bands; straightening kinks; and enfolding the diverticulum. By freeing angulations, fusions, etc., and thus lessening backward pressure, resistance to normal onflow of the intestinal content is diminished and the static condition relieved. Extreme cases may call for colectomy or short circuiting—a procedure described in several of my earlier papers, or such methods as Patterson's "colonic exclusion"—or any equally good substitute. Diverticula may follow surgical procedure on the intestinal tract at a site weakened by the removal of natural supports. After the excision of the appendix, all longitudinal bands should be anchored, and in all gastrointestinal surgery impaired areas should be reinforced to prevent subsequent diverticulations of the intestine.

"A pronounced diverticulum is a troublesome structure; liable to acute inflammation (diverticulitis); with symptoms and results as dangerous as acute appendicitis. Diverticula which once have been the seat of diffuse inflammation may readily be excited to subsequent attacks, with resultant ulceration; perforation or even complete obstruction of the gut." Possible malignant degeneration at the site of the diverticulation is always a factor to be considered. Prompt surgery in symptomatic diverticula must be, of necessity, the method of choice.

34 Gramercy Park.

The Endocrine Glands of Rats in Parabiosis*

PROF. GIACOMO PIGHINI, M.D.
and MARIO DE PAOLI, M.D.
St. Maurizio, Italy

(*Continued from page* 358)

All these modifications are accompanied by the liberation into the canaliculi of lipoid products derived from degeneration of the spermatic cells. Figs. 14 and 15 reproduce some of these tubules, treated with Flemming, from the fifth and sixth pairs, corresponding with those in Figs. 11 and 12. In this tissue is seen in the first place an increase of Leydig's cells, albeit with the interstices filled with lipoid material in a very advanced phase; secondly, complete atrophy of the testicles has taken place, so that the interstitial tissue appears atrophic and devoid of lipoid and anisotrope substances.

As already remarked, this type of changes in the spermatic course of development may be confined to certain groups scattered along the canaliculi, or may extend throughout the entire gland; and in the latter instance, as in states of very prolonged parabiosis, the gland becomes atrophic, falling from two grams or more of weight to a few tens of centigrams.

*From the Lazzaro Spallanzani Scientific Laboratory of the Reggio Emilia Psychiatric Institute, directed by Prof. G. Pighini.

The ovary exhibits a very varied behavior in the condition of parabiosis, depending on the age of the animal, its period of sexual maturity, and the general effects parabiosis has had on it. Individual variations are extreme and, when occurring, less reaction is manifested in females joined when very young. Nevertheless even in them, when the condition is long continued, notable modifications occur, which terminate in atrophy of the gland. In the female of the seventh pair, for example, operated on at a month and a half of age and killed four months later at the age of five and a half months, we found distinct alterations (Fig. 16): many ovules in all phases were apparently normal, nevertheless in some were found degenerated masses among the cellular elements of the granulosa. The vessels were greatly dilated, forming veritable lakes of blood. The corpora lutea, well developed in size, presented an enormous dilatation of their capillary vessels, with accumulations of blood in the centre and scarcity of lutein cells, especially toward the centre (perceptible in the microphoto-

tograph). In this pair the ovaries had become well developed and begun in the secondary period to degenerate in respect of their principal structures, the ovules and corpora lutea.

In more mature animals the changes become manifest very early and seem to follow the same process. For example, in the fifth pair, killed in apparent health on the thirty-first day at nine months of age, we observed the same phenomena in the ovary, with great dilatation of the corpora lutea at the centre and with infiltration of plasma cells among the lutein cells, which had become greatly enlarged (Figs. 17 and 17b).

The abnormal presence of plasma cells in small corpora lutea indicates a process going on of trophic alteration in this tissue. In other females, which have decidedly resented the new condition, the involutive process is still more rapid and accentuated. In the second pair, for instance, five months of age, already on the twelfth day after operation the ovary appeared atrophic, the corpora lutea had almost disappeared, and the lutein cells were indistinguishable from the interstitial, while the granular membrane of the follicles showed intense lipoid degeneration (Fig. 18).

Of the eighth pair, united at the eighth month of life, the female died seventeen days later in a cachectic state, atrophy of the ovary being then very pronounced (Fig. 19). The corpora lutea were rare, and in an abundant connective tissue stroma there appeared only an occasional isolated lutein cell, in some instances infiltrated with hematin pigment, atresic ovules in great number, and patches of lipoid matter (with Ciaccio). Rarely was there a mature follicle with some cells of the granular layer in the lipoid infiltration. The vessels were much dilated and overflowing with blood. This picture, of which Fig. 19 conveys an inadequate idea, is indicative of advanced degeneration and atrophy on the part of the gland. As may be seen, the variations are chiefly individual ones, but constitute a progressive series from the first stage of congestion and rarefaction of the lutein cells in the corpus luteum up to atresia of the corpora lutea and follicles and to atrophy of the gland. The theca lutein cells of the granular portion of the follicles, which are undergoing degeneration, at once render the glandular interstitial tissue hypertrophic, so that it appears much more abundant in lipoids; atrophy of the germinative cells of the gland (follicles and corpora lutea) is added, and the interstitial tissue as well becomes atrophic.

When the ovary is greatly degenerated the uterus, too, shows trophic changes in its muscular structure, especially in the internal layer, and increase of connective tissue. The other glands and organs likewise exhibit characteristic alterations, always in proportion to the more or less pronounced reaction of the parabiotic pair to the new condition. The brain is but little affected, merely presenting in case of those dying first in a pair an intense vascular injection. Only in cases where the death of both animals took place soon after the operation and after a violent convulsive crisis was marked congestion observed and production of a considerable increase in the nerve cells. The pituitary gland always showed intense hyperemia in its anterior lobe with dilated capillaries and surplus of blood (for example, Fig. 20 from the eighth pair); and in those cases where decided alterations have taken place in the sex glands the prevalence is observed of basophile cells, small and large. These latter are characterized by small sized nuclei and by excessive development of protoplasm, as though swollen, and stain faintly with the basic stains. We met them in the male of the seventh pair, killed after 165 days, which did not present any notable alterations in the testicles.

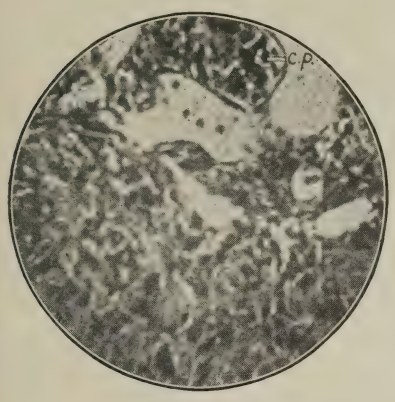
The thyroid appears to function well during the first period, sometimes being hypertrophic with large follicles full of colloid. In atresic animals, however, and those which showed marked alterations in the thymus and sex glands they are found atrophic, with very small tubes containing no colloid but full of cellular detritus from the desquamation of their epithelial walls. Particularly worthy of note were the parenchymatous hypertrophy and the follicular degeneration encountered in two cases of homosexual parabiosis between male and male. Fig. 21 shows one of these thyroids from a male of the third pair which died after twenty-two days of parabiosis. The gland was much enlarged, divided into lobes by hypertrophic connective tissue, and on section showed a number of very large follicles filled with basophile and a few acidophile cells. In many of the basophiles the epithelium was exfoliated and thrown out into the lumen among the colloid. Numerous small vesicles had run together to form reservoirs of colloid enclosed by thickened parenchymal tissue, in which active new formation of follicles was going on. In many of the vesicles were extensive extravasations of blood (Fig. 21, ve.). The excessive vascular dilatation presents a type of parenchymatous struma resembling that encountered by one of us (Pighini) in his experimental study of goitre in rats.

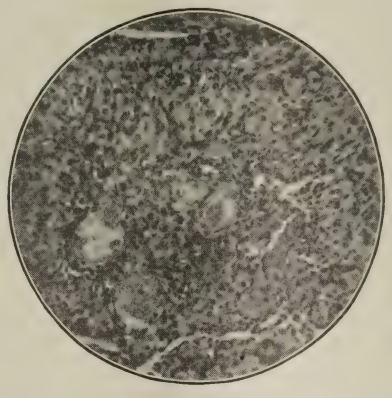
Decided alterations were always met with in the adrenal capsules. The cortex showed marked impoverishment of lipoid substances, which took on with Nile blue a bluish tint; and with the polarizing microscope they appeared scant in cholesterin bodies. This was common to males and females alike and greatly accentuated in cases (as in the first, second, sixth, and eighth pairs) which exhibited major trophic alterations in other glands, particularly in the thymus and sex glands. The medulla was well preserved, seeming rather at times to be hypertrophic in the matter of chromophile cells, causing it to be somewhat chromicized.

In the spleen considerable hypertrophy occurred in the lypmphatic corpuscles of Malpighi; and in the liver a particularly marked production of new lymph nodes. In the pancreas hypertrophy of the islands of Langerhans was constant and sometimes, as in the fifth pair (killed after thirty-one days) was excessive (Fig. 22).

The observations show that the state of parabiosis in rats of different sex, begun at the age of puberty, is badly borne by both the Siamese companions, provoking morbid reactions in the various internal organs which may lead to the death of one or both partners in a very short time. The syndrome of tonic clonic convulsions which is seen soon after operation, regarding which authors who have previously conducted similar experiments are not agreed, is to us an index of the state of severe intoxication suddenly established between the two parabiosed animals, serving as an irritative stimulus to the central

nervous system. This state soon becomes modified by the rapid development of immunizing processes, and the animals before long resume a condition of apparently normal health, but the reciprocal intoxication continues and manifests itself in one or the other in various ways, according to individual constitution.





FIGS. 17a and 17b.—Photomicrograph of ovary of fifth pair.

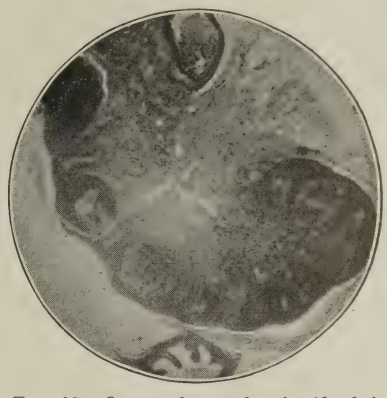


FIG. 18.—Ovary of second pair (fixed in nile blue).

As a general rule, we are able to infer from our experiments only this, the intoxication is least in pairs operated on when very young, during the first two months of life, and in those born of the same litter, but is always greatly accentuated when the two members of a pair are old and of different families. Why the male or the female should be the one first affected cannot be explained unless by resorting to the generic concept of the relative specific qualities inherent in the constitution of every individual.

In homosexual pairs, on the other hand, between two males, with which sex alone we have experimented up to the present time, parabiosis is badly borne, if practised at an age somewhat advanced (seven or eight months), although without pronounced reciprocal morbid reactions in very young animals. Still, in such pairs, as an immediate result of the operation, the identical convulsive phenomenology takes place as in heterosexual pairs, indicating that the reciprocal intoxication is a matter, not of sex, but of differences of humoral exchange existing between individual and individual.

The earliest morbid reactions in this toxic state are seen histologically in the thymus, which sometimes appears altered as early as twenty-four hours after the operation. This tends, as we have seen, to degeneration of the lymphocytic cortical cells and accompanying infiltration of all the epithelial tissue with plasma cells. It is a genuine process of acute intoxication which is set up in the gland with various manifestations (sequestra, etc.), but all tending toward complete lysis.

The presence of plasma cells in the thymus has been observed before in involutive processes in that organ by Ronconi in man and by Solie and Schaffer in various other mammifera. In these last, however, it arises locally by transformation of thymolymphocytes. But such a considerable production as seen in our cases and so rapid we do not think has hitherto been observed in any other condition of the thymus—a fact which shows how greatly this gland resents with promptness and violence the altered humoral condition established in parabiosis. Degeneration of the small round lymphocytic cells is certainly the first step in this process and serves as a chemiotropic appeal to the plasma cells. When these have passed out of the vessels, very probably they continue to multiply locally until they come to constitute the only active cellular element in the connective tissue stroma of the gland. That plasma cells can enter and reproduce themselves in tissues apart from inflammation has already been maintained by Martinotti, Ioannovic, and others. In thymus glands the products of autodestruction of small round cells

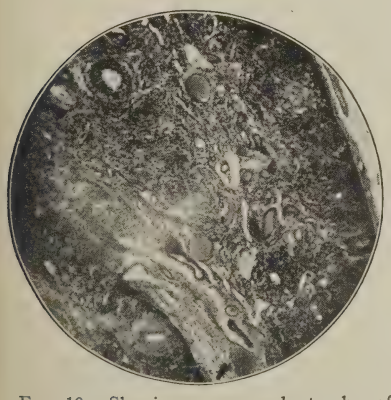


FIG. 19.—Showing pronounced atrophy of ovary of eighth pair at death.

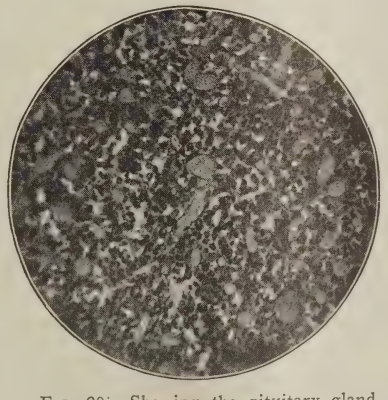


FIG. 20.—Showing the pituitary gland of eighth pair.

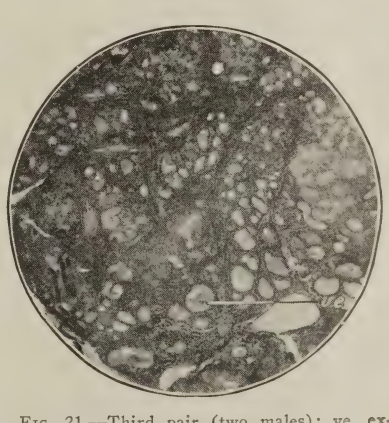


FIG. 21.—Third pair (two males); ve, extravasation of blood into a follicle.

served as a stimulus to the plasma cells and offered them a suitable soil for fermentation and culture, and they so multiplied that the surrounding connective tissue of the gland, in the cases observed, became infiltrated, and the infiltration went so far as to reach the neighboring submaxillary glands (which remained normal so far as concerned their parenchyma cells). Alteration of the thymus was common to all the pairs in parabiosis, as well to those who bore the condition better as to the homosexual; thence arose the immediate reaction to humoral exchange in the two individuals.

This was followed in order of changes by that of the sex glands in heterosexual pairs. The modifications in testicles and ovaries tend to degeneration of the specific inconstant cells of these glands, those of the spermatic vessels and the follicles. We have seen in testicles the early degenerating of spermatocytic nuclei, the fusion of chromosomes, the accumulation of the nuclei of degenerated cells in protoplasmic masses formed in all probability of spermatoblasts, and their disposal by forming rounded masses having the appearance of giant cells, these latter being figures resembling those found occasionally by Ebner in the testicles of rats and regarded by him as products of degeneration. The last stage of this process consists in diminution of the cells of the spermatic series and rarefaction of the canaliculi till nothing is left but the membrana propria and a few Sertoli cells. In the early stages of this seminal degeneration the Leydig cells of the interstitial gland increase in number and size, being loaded with phosphatid and cholesterin lipoid substances (see Figs. 11 and 14). In advanced stages likewise of testicular degeneration and atrophy of the canaliculi the interstitial atrophies also and loses its lipoids. Thus is demonstrated the trophic functional relation existing between the two tissues.

In the ovary rarefaction of lutein cells occurs until the corpora lutea disappear, together with hyperemia and infiltration of plasma cells and atresia of the follicles.

These progressive modifications of the sex glands render animals of opposite sex in parabiosis incapable of impregnating and of being impregnated. But the male of the seventh pair, in full puberal development (at about five months of age) after three months in parabiosis, showed its power of generation with a female placed in the cage of the two partners in parabiosis. The same female, however, after bringing forth and raising her litter of seven, remained in contact with this male for more than a month and continued sterile; and another female continued equally sterile. Killed a little later, this male, as we have seen, showed no evidence of alterations in the seminal canaliculi. Still, a functional alteration existed, which ought possibly to be interpreted provisionally as evidence of a histological alteration.

The females in parabiosis we never succeeded in impregnating with males from without, not even that of the seventh pair, in which the ovaries were shown to be altered.

Concomitant alterations, which however seemed to be produced at a later time when the thymus and sex glands had already been impaired, were found in all the other viscera with individual variations of precocity and intensity. Among these the most constant were encountered in the adrenals and the pituitary gland.

At variance with Matsuyama, who found an increase of lipoid material in the glomerular and fascicular zone of the adrenal cortex, we always found this area in the adrenal glands of both sexes very poor with the polarizer, as well as in phosphatid lipoids, as in anisotrope cholesterin compounds; and this impoverishment we found at the maximum in the pairs most affected by the parabiotic fusion. The medulla was always rich in chromophile cells, but not very rich in chromaffin substances (little chromicized) and very vascular.

In the pituitary there was always very intense hyperemia, and in the majority of instances an evident increase of large basophile cells, resembling those described by Matsuyama under the name of castration cells and pregnancy cells, because found by him predominantly in those states, as well as in parabiosis.

In the thyroid the reactions were evident, were not characteristic, and seemed to be closely associated with individual constitution. We do not know, for the present, how otherwise to interpret the parenchymatous struma found in the dead male of the third pair, a parabiosis of two males. Nevertheless, it seems that in severe cases the thyroid may suffer from a degenerative process affecting its follicles, with narrowing of their lumen, diminution of colloid, and exfoliation of the lining epithelium.

There is considerable hypertrophy also of the islands of Langerhans in the pancreas, and enlargement of the Malpighian lymphatic bodies in the spleen and the lymph nodes of the liver, changes which are especially evident in severe cases. The terminal appearances in the spleen and liver are reported as observed by Pentimalli in protein intoxication in his animals, and must be an effect of the mutual heteroprotein intoxication of two individuals whose circulation is fused into one. The hypertrophy of the islets of Langerhans is not easy of interpretation. The animals joined together have seemed greatly emaciated; their muscular masses have undergone a dystrophic process, while their internal processes of metabolism are modified by the new conditions of reciprocal exchange. It is to be supposed that the organism, under these conditions, would accomplish a change in such a way as to meet the altered metabolism of carbohydrates, among which the principal substances are the sugars. Probably, therefore, a demand is made on the islets of Langerhans for increased effort in their function of regulating this metabolism of carbohydrates and fixing the hepatic glycogen.

Pende has brought fairly out in his treatise the functional synergy of the pancreatic hormones, and especially the insular hormone, with those of the genital organs, and has advanced the opinion that the thymus is associated with them. One of us (Pighini) has found in the pancreas of his thymectomized animals degenerative lesions of the acinous cells, while the islands, on the other hand, seemed always well preserved and even hypertrophic: this accords with Pende's view. The finding now in our parabiosed animals of lesions in the genital glands and the thymus, on one hand, and of hypertrophic islands of Langerhans, on the other, confirms the conception

of functional vicariousness between these glands in regulating glycemia and glycosuria.

Such an anatomicopathological picture requires a number of explanations. First of all, among the authors who have occupied themselves with the subject are some who have not found the details as described by us, or who deny them. Next, it is well to keep before us the method of operation followed in parabiosis. Celostomy, followed also by Matsuyama in his parabioses, has given here a very high percentage of deaths, besides the danger of spreading irritative processes and that of adhesions for the viscera studied in the abdominal cavity, without offering any greater advantage in humoral exchange between the two partners. For these reasons we gave the preference to musculocutaneous ligation over an ample area with scarification of the muscle, as Heyde had already done, thus securing a minimum of lethal results and a sufficient and permanent humoral exchange, as was demonstrated by the rapid elimination of iodine by the kidney of the twin not injected, by the clinical reactions effected immediately and later, and by the anatomical results.

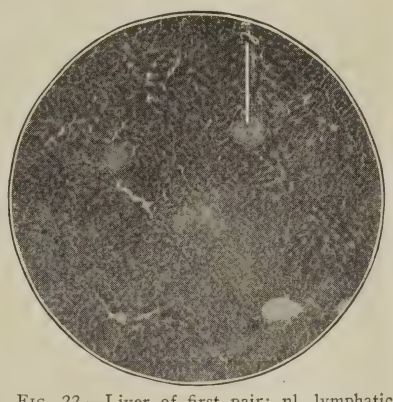


Fig. 22.—Liver of first pair; nl, lymphatic nodule.

Contrary to the opinion of many authors (Schmidt, Matsuyama), we do not believe that musculocutaneous fusion over a wide surface provides better than does celostomy for humoral (lymphatic and sanguineous) exchange between the two partners. This is certain, that by this method we obtained quick reciprocal reactions and morbid responses in the internal organs in all those we operated on, excluding the few cases which were considered to have come to death from infection due to the operative procedure.

Our anatomicopathological picture, however, corresponds in most respects with that found by Matsuyama, while the school of Sauerbruch (Schmidt) and Mayeda do not agree with Matsuyama and therefore not with our findings. All these experimenters have made use of celostomy. The difference in effect may be attributable either to the age at which the rats came to operation, or to incomplete humoral fusion as a result of the operation.

At any rate, the fact is significant that Matsuyama and ourselves obtained histopathological findings in the internal organs which so closely correspond—the alterations described in the male and female sex glands (denied by Mayeda) and modifications in the anterior pituitary lobe. Still, we differ from Matsuyama in certain findings regarding the adrenal gland, whose cortex we found poor in phosphatid and cholesterin lipoids, while he found it abundant in these just as in states of pregnancy and castration. And furthermore, we are increasing our observations of primary histological results in the thymus, which Matsuyama says are generically atrophic when he is discussing (in the first part of his work) the outcome of parabiosis in general on the liver, on the spleen, on the pancreas, on which organs no one had previously concentrated attention by a special study of parabiosis between individuals of different sex.

Matsuyama, as we saw at the outset, considers all his findings to be related to the changes in the sex glands, which are the first to be established in pairs of male and female through a humoral antagonism exercised over one another by the two partners of opposite sex. Effecting thus a reciprocal autocastration, he is led to find a correspondence between alterations in the other endocrine glands of rats in parabiosis and those encountered in castrated rats or in females in a pregnant state. The increase of large basophiles in the pituitary gland and of lipoids in the adrenal cortex are definitely phenomena common to these latter conditions and to parabiosis, and result from the modifications which take place in these conditions in the sex glands.

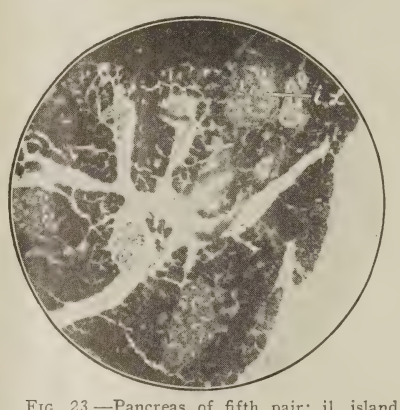


Fig. 23.—Pancreas of fifth pair; il, island of Langerhans.

Such a comparison of the three conditions, of which one, pregnancy, is purely physiological, appears a little too artificial and conventional. Even recognizing that there are many points of affinity, these cannot be grasped in a single clinical and anatomicopathological picture. It is quite true that in pregnancy there is an arrest of follicular evolution and production of a hypertrophic corpus luteum, as Matsuyama found in the first stage of parabiosis, but from this condition to complete castration is a long leap; for this latter removes from the organism the highly important internal secretion of the thecalutein cells of the corpus luteum and interstitial gland, and the effects of castration in all the other glands are exceedingly variable. Enough to mention the thymic hypertrophy which is one of the most characteristic effects of castration, while in pregnancy and in parabiosis we have proved that just the opposite takes place. There is a correspondence only in the anterior pituitary lobe, but it happens that the appearance of large basophile cells in this gland is met with in a great variety of altered conditions of hormonic correlation in the organism (for instance, in goitre), a fact which robs these particular conditions of the attribute of specificity. And the correspondence between the lipoid hypertrophy of the adrenal cortex in pregnancy and castration and that in parabiosis does not exist for us, our adrenals always proving hypotrophic, on the contrary, in regard to these elements of their composition.

Avoiding any preconceived finality in the interpretation of our results, we are inclined to this pro-

visional explanation: The pathological reactions in the glands of internal secretion and other internal organs in parabiosis between male and female are not due to a primary antagonistic toxic action on the part of the testicular and ovarian hormones, as Matsuyama maintains. If they were, it would be difficult to explain, for example, how testicular grafts in hens incompletely ovariectomized can produce individuals with intersexual characteristics developing in complete wellbeing (Pézard, Sand, and Caridroit). The entire organism of male and female, tuned to a response which is specific for each sex respectively, joins in rendering the humoral fusion of a male with a female more toxic and less well supported by the two participants than that between members of the same sex. Between these latter, in fact, there are established from the very beginning toxic relations which cause the excessively sensitive thymus gland to exhibit promptly a morbid reaction. It is logical to assume that two organisms of the same sex, being alike in their internal metabolism, would bear their humoral combination with better success than those of different sex.

But in parabiosis of male with male we found a beginning of alterations in the testicles, and Nissen, who has fully confirmed Matsuyama's experiments, has recently affirmed that the alterations in the sex glands are the same in advanced phases in pairs of male and female as in those of male and male or female and female. This agrees with our point of view, that the primary cause of the reciprocal change is connected with the dysharmony occasioned in internal metabolism by the fusion of the two organisms independently of sex.

Regarding the reactions of the internal tissues in such dysharmonic parabioses we report as follows: Experiments conducted by other methods have already demonstrated the intimate functional relations between the sex glands, the adrenal cortex, and the thymus, and one of us (Pighini) has also evoked them in his different studies of vagotonia, of thymectomy, and of adrenalin intoxication in fowls. These are the three glands which together withstand the assaults of various kinds made on the internal chemism of the organism; and thus in protracted fasting, in avitaminosis (from lack of vitamine B), under x ray treatment, as well as in the vagal alterations referred to and in adrenalin intoxication, we have found more or less pronounced degeneration of the testicles and ovaries, scarcity of lipoids in the adrenals, atrophy of the thymic cortex, while thymectomy is followed by very evident lesions in the ovaries and testicles and lipoid rarefaction in the adrenals.

(*To be continued*)

Atypical Angina Pectoris*

JOSEPH BARSKY, M.D.
New York

Of the vast variety of cases that we have followed in our cardiac clinic, I wish to speak of those that presented frank anginal symptoms, and especially of that small number of cases presenting symptoms which deviated from the classical anginal picture.

I would define angina pectoris as a painful sensation of severe and terrifying character starting usually, though not always, at the middle or upper part of the sternum, and radiating to the left chest, back, arm and forearm, mostly on the ulnar aspect. At times the pain may start at distant points, and radiate towards the sternum. The sensation of pain is usually followed by hyperalgesia in the same areas. Most cases end fatally.

Before proceeding with the description of angina pectoris, it would be appropriate to state some of its causes and the pathological findings.

1. *Coronary disease.*—In this country, most clinicians believe that coronary disease is the cause of angina pectoris. It is only necessary to state that many cases of angina pectoris coming to autopsy show none or only slight disease of the coronary vessels. On the other hand, there are many cases dying of myocardial insufficiency due to coronary involvement that never presented any anginal symptoms. If coronary thrombosis or embolism causes any anginal symptoms, it would be reasonable to expect that many cases showing such lesions would be subjects of anginal attacks. Willius, who studied eighty-six cases of coronary disease that came to autopsy, found that only twenty-two per cent. gave a history pointing to anginal paroxysms. In view of this fact, how can we assume that the diseased coronaries were the causative factor of the attack? It is true that the sudden occlusion of a main coronary vessel may be the immediate cause of death, but this is entirely different from the death during an attack of angina pectoris. A patient may have many attacks of angina and live for years.

2. *Vasoconstriction.*—Other clinicians and pathologists maintain that anginal symptoms are due to a vasoconstriction of the coronary vessels. This theory is rather attractive as it explains the absence of the coronary or cardiac lesions in cases at autopsy. The basis of this theory is analogous to other conditions dependent upon vasoconstriction. No one has, however, ever seen the constriction of the coronaries, nor is the existence of vasomotor nerves to the coronaries accepted by all physiologists.

3. *Sudden increase in blood pressure.*—Dr. Reed in an able article advanced the theory that a sudden increase in the blood pressure may bring on an attack of angina pectoris. He bases his theory upon the fact that exercise always increases the blood pressure and that this may bring on a paroxysm. Just as a breath of air may bring on an agonizing pain in cases of trifacial neuralgia. Still, the breath of air is not the cause of the neuralgia. An increase of blood pressure may explain an anginal attack when it occurs in an apparently healthy heart. Hypertension cases

*Abridgement of paper read before the Williamsburg Medical Society, March 9, 1925.

of this nature present themselves with symptoms both of hypertension and angina. A comparative study of hypertension patients with anginal symptoms and those without such symptoms has not been fully made.

4. The most important etiological factor as claimed by Allbutt is an inflammatory condition about the suprasigmoidal portion of the aortic arch. He believed that the suprasigmoidal portion is the most sensitive part to pressure changes, terming it the sensitive tambour, and that in cases of angina, it is the seat of a definite pathological process, especially in its outer coat. This process may be acute, subacute, or chronic, and either bacterial, such as rheumatic, influenzal, pneumococcic, or syphilitic, or metabolic as in diabetes or gout. He contends that there is always some clear cut pathological process about this portion of the aorta. All anginal cases examined very carefully by a competent pathologist revealed at autopsy some such lesion. Allbutt brought a wealth of material to support his view and a careful study of his work cannot but seem convincing.

However, even Allbutt left unsolved the perplexing and important point as to what factor is responsible for the paroxysms. It is indeed strange that in all the discussion upon the subject of angina pectoris, practically nothing is said as to the immediate cause of the paroxysm. What brings on the attack?

It is my opinion that the existing or determining factor may be a protein poison from food which may gain entrance into the circulation whenever there is an increased permeability of some part of the gastro-intestinal tract and act as an irritant to the aortic plexus, or it may happen that a member of the guanidin group may act by unduly raising the blood pressure in the aorta that can ill afford any additional stress.

The same could be induced by bacterial toxins circulating in the blood and in this way act as an irritant upon the nerves and thus bring on an attack. The paroxysm will last long enough until the body cells will fix or neutralize the poison, and then the attack is over. In a heart that is not much diseased, the patient may recover. A heart that is the seat of marked pathology such as coronary disease will succumb.

In the presence of some definite pathological lesion, a physical or emotional factor may be an exciting agent. A strong emotion may produce the same effect by raising the blood pressure. Walking up a hill, or against a moderate wind will bring on an attack. In support of this view, we do not have to go far. Asthmatic paroxysms we know are brought about by the protein products circulating in the blood stream of sensitized individuals and as soon as the body tissues fix the poison the attack subsides.

The symptoms as described by the patient are that upon any exertion such as walking up a flight of stairs, running after a car, or lifting up a heavy weight, he is seized with a sudden pain. The patient may even be awakened from his sleep by the pain. At first the pain may not be so severe, but gradually increases in intensity. It may be of a tearing character situated under the upper part of the sternum and rapidly spreads in the direction of the brachial plexus, producing a numbness, burning and painful sensation in the left chest, shoulder, and extending backward between the scapulæ along the arm, forearm, wrist and medial two fingers. The pain may radiate upward along the cervical plexus and cause a most atrocious pain in the neck, back of the head, chin and lower jaw up to the ears. Sometimes the pain darts across the chest to the right side only. Occasionally the pain and radiation extend to both sides of the chest with equal intensity. At times the pain is situated in the epigastric region and as it often happens following an attack the patient belches up gas or vomits, he attributes his trouble to the stomach and seeks relief for the gastric distress.

In addition to these viscerosensory reflex phenomena some patients also exhibit visceromotor disturbance. There is a sensation as if the breast bone is being crushed, pressed or driven in toward the spine. He remains as if transfixed, daring not to breathe lest he lift up his breast bone and increase the agony. At times a sickening, sinking, drawing feeling in the epigastrium causes the patient to feel that he will faint or even die if the pain continues much longer. During the attack the sufferer becomes pale, covered with a cold perspiration, grows apprehensive and there is an expression of terror in the eyes. Even if the physician arrives after the paroxysm he is made aware of the terrible struggle the patient has gone through not only by the appearance of the patient, but by the frightened looks of the bystanders as well.

Needless to say, not every patient will exhibit all the symptoms described nor is the intensity of the pain the same in all patients. What is most important to remember if we are to recognize an atypical case is the fact that any one symptom instead of starting in the midsternal region radiating upward or downward (as described), the reverse may occur. Instead of having a combination of all the symptoms the patient may have one symptom only, for example, a pain of terrific nature in the wrist only, or in the shoulder, intercostal muscles, a choking constriction in the throat. All these symptoms or even one may be none the less dangerous.

The first attack may kill or the patient may have many attacks, eventually dying of heart failure. To confirm a diagnosis all cases should be examined for hyperalgesia in the distribution of the painful areas.

The physical examination of patients who, if prior to the attack, were free from organic heart lesions, gives us negative results. The pulse rate is not increased and is regular if it has been so before. I have had the opportunity of measuring the blood pressure in several cases during the attack and in one case only was there a rise of blood pressure. It is quite conceivable that the pain itself may increase the blood pressure. Electrocardiographs taken of a great number of cases by Willius and others did show several abnormalities, but not distinctive for this condition. Fluoroscopy may show an enlarged aorta but considering the age of the patient, this is not necessarily abnormal. Instrumental examination will not aid us much. Our clinical sense and a familiarity with this symptom complex is our only guide to the correct diagnosis.

The French maintain a sharp distinction between the angina of effort and the angina of rest. In my opinion, they cannot be sharply differentiated and

separated for they blend into one another. Some anginas start at night only and later attack the sufferer on the slightest effort and vice versa.

It is my experience that these night attacks are as a rule more violent and accompanied by greater mortal fear than those attacks which come on with effort. In attacks brought on by effort, the provocative cause of the immediate attack is purely physical and is under the control of the patient. He can regulate his effort or stop it altogether at will with the relief of his symptoms. Not so with the night attack. Here the sufferer has nothing to do with bringing on the paroxysm but is stricken down in the dark as by an invisible enemy. The patient remains in agony until his body tissues take care of the exciting factor whatever that may be and only then does he get relief. In this case, the excitant may be a protein poison, a bacterial toxin absorbed from the gastro-intestinal tract, or a retention in the blood of some substance that is ordinarily eliminated by the kidneys and this substance acts as an irritant to the aortic plexus.

I will cite the records of a few typical cases which will illustrate the remarks that I have previously made.

Case I.—Patient was sent into the hospital by Dr. H. E. Isaacs for the removal of the prostate. Patient had had urinary disturbances for some time due to prostatic hypertrophy. Dr. Isaacs requested the examination of the patient as to operative risk as he did not consider the patient in the best condition.

The patient was a man fifty-six years old, but looking older. Not of the robust type, but by no means sickly looking. His previous medical history, with the exception of the prostatic enlargement, was of no importance until about ten days prior to his admission to the hospital. The physical examination of the chest gave the usual findings of a man of that age—slight emphysema, cardiac sounds rather weak, partly due to the emphysema and probably myocardial weakness; first and second mitral partook of the same quality, aortic second not accentuated. No enlargement was noted. Pulse was regular and equal, not much evidence of sclerosis in the radials. Blood pressure not raised.

Ten days prior to his admission to the hospital, he was suddenly seized at night with a terrific pain in the left chest. He could not locate the exact starting point but it involved the entire left chest front back and shoulder. Breathing or any movement increased his suffering. He had several physicians during that night and all diagnosed the case as pleurisy, and gave him a hypodermic medication with little relief. In the morning, he had a consultant who confirmed the diagnosis as pleurisy, advised strapping of the chest, but with no relief. He suffered for about thirty-six hours, could not breathe or turn to the other side for the pain was excruciating.

He was relieved of his suffering after thirty-six hours and began to have a slight rise in temperature to 100-100°. At this point, moist râles, diminished breath sounds were found; the case was diagnosed as a probable bronchopneumonia. The elevation in temperature lasted about three days. On the sixth day he was free from all symptoms and out of bed. On the tenth day he came to the hospital.

In analyzing the case, I had no difficulty in recognizing the case as atypical angina pectoris presenting a combination of the viscerosensory and visceromotor types. I advised against operative interference. In this case, the hypertonicity of the intercostal muscles was such that the slightest turn of the body or even a deep inspiration increased the agony and gave symptoms resembling pleurisy. The latter condition, however, has not the dramatic pain and can always be relieved by morphine. Next day the patient was taken to the x ray room. While there he uttered a cry of pain, clutched in the region of his heart, gave one gasp and died.

Case II.—On the 13th of December, I saw a similar case, that of a druggist, thirty-four years of age. He gave a history of having had grippe six weeks previously. He was confined to bed for some time and made a good recovery. Three weeks later he was seized with a terrific pain in the entire left chest. The pain could not be relieved by morphine. Because of a few moist râles and slightly diminished breath sounds at the base of the left lung, the physician diagnosed the case as pleurisy. He was kept in bed for two weeks and one morning when he felt well he went down stairs to go to the store. He was seized with an agonizing pain in the upper sternal region and had to remain on the spot for fifteen minutes until the pain subsided. Now he has paroxysms of pain on the slightest exertion. At present, he suffers from cardiac insufficiency, dilated heart, enlarged liver, congestion of the lower bases of the lungs and is confined to bed. A cardiac infarct has probably developed which, if the patient lives long enough, will result in an aneurysm and rupture.

Urine and blood were negative. Wassermann was negative. Blood pressure was 100-70. This condition started as an atypical case and was diagnosed as pleurisy. These two cases illustrate the viscerosensory and visceromotor types.

Case III.—Male, aged fifty-six years; appeared much older. Keeper of a small grocery store which entailed hard work and long hours. He had both legs amputated for thromboangiitis obliterans several years ago, healing with good result. He had no other diseases before amputation or after. Though not of a very robust type, he enjoyed fair health, attending to the store, until a year and a half ago when he was attacked with a constriction of his throat and a choking sensation. There was no pain, but a feeling of strangulation and a fear that should it continue he would be suffocated. It lasted a few minutes and passed off leaving him covered with profuse perspiration and somewhat weakened. He had several attacks. During the eighteen months he had seen several consultants and the case had been diagnosed as globus hystericus. I was called in one evening to see him. When I arrived the proxysm was over. This time the attack was more severe, lasted longer and the patient felt more exhausted, more frightened than on previous occasions. I took a detailed description of his case and was assured that at no time did he have any pain sensation. The last attack was in no way different from the previous attacks, with the exception of the severity and that this time he felt completely exhausted, for he presented the appearance of shock. His face was waxy, eyes strained, pulse feeble, about 90, blood pressure 90-60.

I diagnosed the condition as angina pectoris, of the visceromotor type. In this case there was not enough reflex sensory phenomena to evoke pain, but heightened tonicity of the muscles of the neck gave the sensation of strangulation. I gave a fatal prognosis. The patient died twelve hours later.

Case IV.—Male, fifty-six years old, tailor, always well, robust physique and unusually well preserved and of a cheerful disposition. Never had occasion to consult a physician or a dentist in his life. Two weeks ago, while walking home from work, he felt a sudden burning in the epigastric region. It was so severe that he could not proceed home but had to stop at the nearest drug store, where he was given something which relieved him of the sensation. The burning lasted for fifteen minutes, during which time he did not attempt to move for he could not. Two weeks later, at about 3 a. m. he awoke from his sleep with a terrific burning in the epigastric region. In addition to which he had a sickening feeling. The burning was so severe that the family had to summon a physician. By the time the doctor arrived, the condition had somewhat improved. The patient was given a hypodermic and was told he had stomach trouble. When he presented himself at my office for examination, his chief complaint was dyspnea on exertion. He had a feeling that he had stomach trouble. The physical examination, including the urine, was negative. No cardiac or aortic enlargement was made out on percussion. Pulse was regular and fair in volume. Blood pressure was not increased. This is a case of purely sensory phenomena. Of course, we may raise the question if this case should be included in angina pectoris. But the rapid onset and the rapid termination and the severe burning, sinking sensation and the fact that after the second attack, he began to show myocardial symptoms, would in my opinion, justify considering the case to be one of angina. There is one other question —whether the patient did not mistake the pain for burning. To my repeated interrogation and explanation of the difference between pain and burning, he was of the opinion that it was burning. He never had any pain in any part of his body. This case is purely of the sensory type.

The following case is of interest on account of the fact that the pain started in the left arm, at times in both arms, radiating backward and forward in the chest.

Case V.—The patient, male, sixty years old, teacher by profession. He felt well until six years ago, when on walking he began to experience a pain in both legs so that he would be forced to stop. After resting, he would be able to proceed. He never took long walks on account of this pain in his legs.

Two years ago, the pain in his legs subsided and on exertion he began to experience a pain starting in the left arm sometimes in both arms, radiating to the back and upper sternum. Lately he gets pain even at night and it is more severe in character, so that it has practically invalided him for the past few weeks. Pain is now present after the slightest exertion. Marked dyspnea is present.

Physical examination is not remarkable. There was emphysema and signs of chronic bronchitis. Cardiac sounds were weak, belllike in quality. No cardiac enlargement to percussion due to emphysema. Pulse 74 and regular. Blood pressure 120-80, blood normal. There were free traces of albumin in the urine. The patient died three months and seventeen days after I saw him.

In later development, the patient showed symptoms of cardiac decompensation, and contrary to the prevailing opinion that when decompensation sets in the attacks cease, the patient died during an attack at night while at complete rest. This case illustrated the unusual starting point.

Case VI.—Male, age forty-four, admitted February 17th, discharged March 14, 1923. Six years ago he began to have pain, supposed to be colicky in the right upper quadrant radiating backward and toward the right scapula. It was necessary to give morphine for the relief of the pain. Between attacks the patient felt well. The case was supposed to be one of cholelithiasis.

Physical examination showed the left heart enlarged, enlargement of the aorta and a systolic blow at the apex. The pulses were equal, the blood pressure 202-100. Wassermann reaction was negative. There was slight rigidity in the upper right quadrant and the liver was slightly enlarged. Laparotomy was done and negative gallbladder findings resulted. The mesenteric arteries were sclerotic. The patient died in an attack shortly after leaving the hospital.

Case VII.—Female, aged seventy-two years, had been sick for about three years with all possible conditions suspected. Her gastrointestinal and skeletal systems had been x rayed with negative results. She had no disease bearing on the present illness. Three years ago, she began to have a pain of gnawing pressing character in the upper left quadrant radiating at times to the right chest and up or down in the abdomen. At first the pain came in paroxysms, but later the pain was almost constant according to the children from whom the history was obtained. The patient herself was not intelligent enough to give a detailed account. From all the conflicting details that were obtained from the family, a few facts definitely pointed to angina.

While the patient was continually complaining, there were times when the family were obliged to call in a physician. She suffered such an attack the night before she was admitted to the hospital. She was seized with a terrific pain in the abdomen which caused her to faint. The attack lasted about an hour. Morphine did not relieve the agony.

The woman had lost forty to fifty pounds in weight within the last three years. During her eleven day stay in the hospital, clinical findings were negative, gastric analyses showed absence of free hydrochloric acid, blood pressure 116-70, Wassermann negative, x ray of the skeletal and gastrointestinal systems negative. A few days after the patient left the hospital she had another attack of abdominal pain and died.

These cases cited were selected from my case records for the purpose of illustrating the points brought up in this paper. Nothing can be gained by citing more cases. I have attempted to throw some light on a subject which is beset with great difficulty. This difficulty I have sought to overcome and I hope my efforts will be of assistance to you.

127 West Eighty-sixth Street.

Practical Therapeutics

The Action of Allergic Components in the Pathogenesis of Arteriosclerosis and Its Treatment Directed to the Cause with Animasa

CARL FUNCK, M.D.
Köln, Germany

Drawing on observations on a large number of patients, in my capacity as chief of section on internal medicine at the local Trinity Hospital, I designated (1) in 1913 and 1914 a group of forms of diabetes and the majority of the arteriosclerotic and hypertonic affections as impairments of adult metabolism caused by the passage of products of portein cleavage, foreign to the blood, through the intestinal mucosa and by the abnormal permeability of the filtering organ, the liver. I proved at that time the presence in the blood of these products of protein cleavage in a series of cases of diabetes, of intestinal autointoxication, cirrhosis of the liver and gastroenteritis. These relations between alimentary intoxication and diabetes have recently been somewhat confirmed by the success achieved in von Pirquet's clinic with insulin (2) in a series of nondiabetic children who were suffering from a severe alimentary toxemia. Correspondingly diabetic coma and the intoxication of children who are suffering from toxic alimentation with products of protein cleavage are essentially related processes and should be treated by the selfsame organic preparation.

These connections as to cause were subsequently confirmed by Widal (3), Spillman (4), Coca (5), Frugoni (6), Kämmerer (7), Laroche (8), Pagniez (9), and Nast, by Storm van Leeuwen (10) for asthma and migraine. Hulse (11), Vollhard (12), Kuczynski (13), Sokoloff and Atschnikoff (14), Heteny (15), Fox (16) and other authors confirmed the importance of products of protein cleavage, foreign to the blood, in the genesis of diseases of hypertonia and arteriosclerosis. It is surprising, however, that the above mentioned authors draw no general conclusions regarding the pathogenesis and therapy of the cases of arteriosclerosis that they observed, in spite of their positive clinical and pathologicoanatomical findings.

The parenteral digestion of the proteins and its relation to the arteriosclerotic diseases as being of causative nature has, true enough, had great attention paid it in the above cited recent literature. On the other hand, the study of its clinical effect was made difficult by the long duration and the torpid form of pathological process of arteriosclerosis and investigators were confining themselves mostly to the investigation of the generally similar forms of allergic affections, like hay fever, bronchial asthma, migraine, which are acute and easily controllable, because presenting acute swiftly passing symptoms. May I mention, among many others, the experiment of Hajos (17) who was able to abort attacks of allergic asthma in a series of asthmatics, by means of certain proteins (pork, eggs) only when the gastrointestinal cause had been previously damaged by the addition of cognac, i. e., been made permeable to portein. Though Storm van Leeuwen does not take the intestinal mucosa as a gate for the passage of protein bodies, foreign to the blood, but tries to prove sensitization by way of the bronchial mucosa, in a large group of allergic asthma and hay fever affections. This geographical shift of the gate of entrance nowise changes, in principle, the conception of the pathogenesis of these groups of affections. Nay, it rather strengthens the force of the proof contained in it, since it generally arrives at the same view of the pathogenesis although starting from divergent observations.

Let us now assume with the authors quoted above that on the majority of the arteriosclerotic affections, except those arising from an intoxication of specific infection, especially lues, there is a pathological permeability of the intestinal mucosa, and of the hepatic filtering mechanism, for products of protein cleavage. If so it appears consistent why Lowenthal (18) established two main factors and conditions for the production of experimental arteriosclerosis in rabbits by way of introduction of cholesterin, namely, first the introduction of large quantities of protein, and second, injury to the liver so that cholesterin cannot be excreted altogether, or completely, but that, on the other hand, products of protein cleavage foreign to the blood, could pass through the filter of the liver. True, we cannot simply draw an analogy as to the pathogenesis of arteriosclerosis in omnivorous man from the herbivorous rabbit, because the multiplicity of the pathogenic factors is infinitely greater in man. But the relations that Lowenthal discovered are so exactly in agreement with the causative factors, so far proved for the pathogenesis of human arteriosclerosis by Kuczynski, Vollhard, and other authors by means of pathologicoanatomical findings, that their agreement is most striking. Again the causes are first, the rise of continuous states of angiospasm (*status angiospasticus*) by the action of products of protein cleavage foreign to the blood; secondly, the surcharging of the blood with cholesterin, and thirdly the degeneration of the endothelium of the angiospastic bloodvessels and the infiltration of these degenerated cell heaps with the cholesterin that copiously circulates in the blood. Similar reactions of the vascular walls are also known to take place in the course of insidious chronic anaphylaxis in other affections, especially in the anaphylactic enteritis of Schittenhelm and Weichard, in cases of mucous colic described by Foges (20) and others. Naturally not all products of protein break down which cause an angiospasm, hail from the gastrointestinal tract, but may, for instance, get into the blood stream through a dysfunction of endocrine glands. This I have proved in individual forms of diabetes for the pancreas. This is likewise well known from the ovarian dysfunction at the climacterium with the vasomotor

disturbances constantly appearing in conjunction with it, and with the hypertonia that often hangs over this period.

The general importance of the products of protein cleavage, foreign to the blood, in the rise of the autochthonous or idiopathic, or cryptogenetic arteriosclerosis, is paramount. The other toxic or infectious causative factors in the pathogenesis of arteriosclerosis, like nicotine, lead poisoning, lues, show far less in frequency of occurrence and are of lesser importance.

At any rate the pathologicophysiological and pathologicoanatomical and clinical investigations by the different schools of thinkers and investigators within the last twelve years who have attacked the question from the most diverging viewpoints, have confirmed my contention expressed in 1914. Then I stated that the greatest number of the arteriosclerotic affections are a nutritional disturbance in adults, and are essentially caused by the passage of products of protein cleavage foreign to the organism by way of the intestinal wall into the blood, and by dysfunction of the filter mechanism of the liver.

Therapy has followed these advances in the knowledge of the pathogenesis of the allergic diseases slowly and step by step. At first, successes were achieved on a purely empiric basis, in asthma, by means of tuberculin injections, later it was found that these tuberculin injections will also lower blood pressure. The parenteral utilization of the most divergent products of protein cleavage, whether due to x ray irradiation or from a tonsillitis or influenza, proved likewise able, in many cases, to improve at times asthma and migraine and to lower blood pressure transiently or permanently and to influence favorably the symptoms of arteriosclerosis, even angina pectoris (Hajos). From the recognition of this fact it was no great step to the attempt at desensitization whether specifically as van Leeuwen demonstrates it in asthma and hay fever, or unspecifically as other authors have employed it successfully in asthma, migraine, hay fever, urticaria, likewise, in cases of arteriosclerosis and hypertonia by means of injections of milk deuteroalbumoses, vaccines and other products of protein cleavage, Kylin (21), Hajos. The successes attained by Heilner, Major and others with injections of organic extracts in arteriosclerosis and hypertonia should certainly be ascribed to the same essential curative factor, namely, the nonspecific antiallergic treatment.

Yet, in the arteriosclerotic affections, the injections of products of protein cleavage and organic extracts, if injected intravenously in accordance with the demands of their authors, produce dangerous reactions and at least discomfort to the patients. This fact limits their employment to a small group of cases only. Now, since the passage of foreign products of protein cleavage through the intestinal wall has been proved to be the cause of the majority of the allergic diseases, *desensitization by the same route must also be possible.* For the other allergic diseases authors like Widal, Pagniez and Nast, van Leeuwen and others, have often proved the possibility of a desensitization by the oral route, only a few special products of protein cleavage seemed to have been fit for oral treatment in the arteriosclerotic disease, although Professor Lichtwitz (22) has even aborted angina pectoris by the simple oral administration of peptone, and the authors of Gilbert's school (France) Parturier and others administer successfully, for desensitization, before meals, a small dose of reduced protein (albumin) in spasms of the cholic passages (Gallenwege).

With the organic preparation animasa a truly specific, orally active product of protein cleavage in arteriosclerosis was produced, which passes safely through the intestinal mucosa into the circulation and acts by desensitizing, by reducing blood pressure and relieving the continual angiospasma. The reports of Professor Griesbach (23) (University of Giessen), Professor Carl Lewin (24) (Berlin), Privatdozent Blumenfeldt (25) and Cohn (Berlin Charite), Funck (26) and many others prove the very eminent specific therapeutic action of the organic preparation animasa in the arteriosclerotic diseases and hypertonia. Without doubt this special activity of the organic preparation is conditioned upon the combination of the specific active products or protein reduction with an extract obtained from the intima and media, the potency of which Professor Heilner has proved by means of injections. This organotherapeutic curative factor, animasa, is so well combined with the product of protein cleavage, that it, or its active factors, pass through the intestinal wall unchanged. This therapeutic action of orally administered specific products of cleavage of the protein of organs has been observed and confirmed in other affections of organs, as for instance Brack recently, by using reduced liver substance in liver diseases, or Brugelman, by using ovarian substance that has been built up instead of reduced.

Authors like Griesbach, Migeod and others emphasize in their appraisal of the curative action of the organic preparation animasa, above others, its pressure lowering action and have proved it both by way of experiment and in the clinic, and have especially recommended animasa for arteriosclerosis just because of this pressure reducing action. I personally am reaching the conclusion, on the basis of clinical examinations for six years, and judging from results, that animasa surpasses by far for its curative action directed at the cause, all so far available means, but I am reaching this conclusion on the basis of other considerations and observations, to wit, that hypertonia is only one symptom of the disease called arteriosclerosis and the amelioration of this one symptom cannot be the only criterion for evaluating a cure for arteriosclerosis. We must rather conceive the disease in all its extent in evaluating this curative action. I have become convinced far more than by the mere simultaneous lowering of blood pressure of its far reaching effect that aims at the cause by the improvement which it causes in the general well being, by the restoration of the efficiency for work, even for difficult mental work, of alertness, in short of mental health, by the abolition of premature fatigability and sleeplessness, all of which I repeatedly found in the use of animasa. This general action of animasa was established also in grave cases of arteriosclerosis even when the lowering of blood pressure was not considerable, due to advanced contracted kidney or toxic factors.

It must be apparent to the physician who thinks in terms of biology, that the pathogenesis of arterio-

sclerosis cannot be explained in accordance with one scheme. The multiplicity of the special causative factors of the disease, the interfering actions as those of poisons, infections and other factors are obscured and fundamentally influenced by one big general causative factor. This factor is the predisposition which again depends upon the peculiarities of metabolism, especially the protein reduction upon those of the intestinal wall, the liver and the intermediate metabolism. Recently Weichardt (28) thought the rise of tuberculosis to be conditioned also upon the present of toxically active products of protein cleavage and to be curable by desensitization against these substances. Hans Much (29) likewise considers a constitutional "dysiminunity" (anaphylaxis) towards metabolic products of protein cleavage as primary cause of many systemic affections.

The organic preparation animasa answers most comprehensively the demands made upon it by the biological, physiological and pathological findings, and can therefore be designated as the first causally (that is, directed at the cause) and prophylactically active remedy for such cases in which heredity or conditions of living make probable the development of a premature arteriosclerosis. I prescribe this remedy in accordance with my experience, and still more extensively in the prophylaxis of arteriosclerosis, without, of course, omitting both in therapeutis, and prophylaxis, the indicated physical and dietetic methods of treatment or a specific therapy in case of special indications (syphilis). The special curative action of this organic preparation is most clearly evident in such cases in which arteriosclerosis has been subjected to a protracted medicating and physical treatment and then the treatments were replaced by animasa or when in beginning arteriosclerosis of middle age (a blood pressure of 150 mm., shortness of breath, mild vertigo, congestions of the head, irritability, etc.) all the injurious living conditions were retained as heretofore injurious for the sake of clinical experiments and yet after using animasa for two or three months objective and subjective cure ensued.

It may happen that with the progress of the biological and biochemical technic a still more powerful concentration of the specific curative elements will be obtained which are found in the organic preparation animasa just as the production of the organic preparation insulin was perfected in the last few years. But in the diseases of arteriosclerosis a therapy directed at the cause and prophylaxis will make use of the principle which underlies the organic preparation animasa.

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The Kastle-Meyer Test for the Detection of Blood from the Medicolegal Aspect.—John Glaister (*British Medical Journal,* April 10, 1926) states that from the medicolegal aspect, the Kastle-Meyer test is very delicate and reliable in the detection of hemoglobin. It is apparently a worthy substitute for Day's test, which possesses many fallacies, requires fresh reagents, frequently fails to act when only small quantities of blood are present, and in certain cases gives only a faintly positive reaction, creating doubt in the mind of the examiner whether such should be regarded as positive or negative. There are no "borderline" results. The reaction is well marked, is practically immediate, and time is economized in not having to await soakage of the stains before applying the test, if the watch glass method is utilized. This becomes an important consideration when there are many productions to be examined. The age of the stain does not apparently affect the delicacy of the test. Owing to the extreme delicacy of the test, however, it should be remembered that the greatest care must be taken to ensure absolute cleanliness of all vessels in order to exclude rigidly extraneous contaminations of the vessels as the result of a previous examination.

The technic is as follows: Two chemical solutions are required for the test, one being hydrogen peroxide of strength twenty volumes; the other is composed of a mixture of two grams of phenolphthalein, twenty grams of potassium hydrate, and distilled water to produce one hundred c.c. of the reagent. These three ingredients are boiled, and during the process ten to thirty grams of powdered zinc are added. Boiling is continued until the solution becomes colorless, usually after about ten minutes. About ten to twenty drops of the reagent are added to the suspected bloodstained surface, thereafter adding a few drops of fresh hydrogen peroxide. If blood be present a deep permanganate color develops.

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Placenta Previa*

A. LOUISE McILROY, M.D., D.Sc.

London

PART I: GENERAL CONSIDERATIONS AND DIAGNOSIS

Hemorrhage occurring during pregnancy may be divided into two main groups: 1, hemorrhage before the twenty-eighth week, and 2, hemorrhage after the twenty-eighth week when the child is viable. Although the causes of hemorrhage in these two divisions may be identical, it is more convenient for clinical purposes thus to divide them. In the first group, although hemorrhage may be caused by new growths and other pathological conditions of the uterus, these are comparatively rare. For practical purposes it may be taken that in the majority of cases the hemorrhage is due to partial or complete separation of the ovum from the uterine wall, and that the cause is usually accidental or toxic.

Probably a number of cases of hemorrhage and abortion are due to a low insertion of the placenta, but it is seldom that this can be definitely diagnosed. Hemorrhage before the twenty-eighth week is therefore most frequently due to abortion—threatened, complete, or incomplete—or to the retention of a diseased ovum or mole.

Hemorrhage occurring when the child is viable, i. e., antepartum hemorrhage, may be divided into two main groups: 1. Hemorrhage due to the separation of a normally situated placenta—accidental or toxic hemorrhage. 2. Hemorrhage due to the separation of an abnormally situated placenta—placenta previa.

Normally the placenta is situated in the upper zone or contractile portion of the uterus, and protected by the muscular wall of that organ.

A placenta previa is attached wholly or in part to the lower uterine segment, which extends about three inches above the internal os, and is specially constructed to allow of distention. It is scantily supplied with muscle fibres which are longitudinal in direction. The segment becomes thinned out by the presenting part during the process of labor. It also stretches during the later weeks of pregnancy, and during this period the placenta increases in size, when its position becomes more precarious.

When the segment stretches it detaches itself from the placenta. This occurs during the last few weeks of pregnancy but is especially marked during labor. Hemorrhage is therefore an inevitable result. For this reason such hemorrhages are known as unavoidable.

The placenta may be perfectly healthy, but its separation is due to its abnormal situation. A placenta previa may, however, become detached by accident as the result of jolts or jars against the bony pelvis. It is also liable to degenerate toxic changes similar to those which take place in normally situated placentæ. When the placenta is situated normally, separation is due to some toxic degeneration of the decidua, and the condition is associated with toxemia in other directions.

In every case of antepartum hemorrhage, attention must first be directed to possible low attachment of the placenta, as placenta previa is the most frequent source of severe forms of hemorrhage in the later weeks of pregnancy.

It is a matter of controversy whether the segment stretches before labor, but as the presenting part descends and engages in the pelvis during the last few weeks, there must be a corresponding stretching of the uterus to form the lower segment. The frequent occurrence of placental separation before the onset of labor also points to distention of the lower uterine zone. The placenta does not easily accommodate itself to the stretched uterine wall, consequently laceration of the vessels of the decidua takes place and bleeding from the uterine vessels results.

If there is a tendency toward separation of the placenta owing to toxemia, hemorrhage is all the more likely to occur.

At the onset of labor, the membranes become stripped off at the lower pole of the uterus to form the dilating bag. If the whole or a portion of the placenta is situated in this area it must become detached.

From a clinical point of view placenta previa is that condition in which hemorrhage occurs prior to delivery, and it is in most cases only by the presence of hemorrhage that the diagnosis can be made with any degree of certainty.

*From The Obstetrical and Gynecological Unit of the London (Royal Free Hospital) School of Medicine for Women, University of London.

The cause of placenta previa is unknown. Various theories are given to explain why the ovum should become implanted in the lower uterine zone. Among these are the following:

1. That the fertilized ovum, while in process of escaping from the uterus, is caught at the internal os and becomes implanted in its vicinity. Previous uterine disease which cause distention of the uterine cavity is said to be a predisposing influence. There is very slender proof in support of this theory.
2. That an ovum in the upper zone may have its placenta formed from the capsular decidua as well as from the basal portion. Instead of becoming atrophied, the capsular may proliferate and invade the true decidua of the lower uterine segment. The placenta has a capsular instead of a basal origin. This is the most likely cause of the condition.
3. That owing to defective vascularization of the decidua the placenta may be limited in its blood supply, and for this reason a greater area of attachment is necessary for nutriment. This might explain the theory that placenta previa is due to frequently repeated pregnancies, which cause atrophic changes in the uterus.

When the attachment between uterus and placenta is firm, hemorrhage rarely takes place until the onset of labor.

Placenta previa sometimes shows areas of degeneration from defective blood supply, and in some specimens a placenta succenturiata is observed, and also a membranous form.

The cord is frequently inserted at the edge of the placenta—the battledore type.

Placenta previa has been known to recur at subsequent pregnancies.

CAUSES OF THE HEMORRHAGE

Hemorrhage is due to laceration of the vessels in the decidual layer on the uterine wall. The vessels become thrombosed on separation, and in some cases the hemorrhage is automatically controlled. The hemorrhage occurs during uterine contractions, when the separation causes laceration of the maternal, venous, and arterial capillaries. The lower uterine segment is stretched by the longitudinal muscle fibres, by the pressure of the bag of membranes, and also by the presenting part, since the latter tends to descend in the direction of the pelvis and take up its position in the cervical portion of the uterus.

If hemorrhage occurs during pregnancy and before the onset of labor, it may be accidental, from the separation of a defectively protected placenta, or it may be due to painless uterine contractions which occur throughout pregnancy, but are more marked towards the end. These contractions stretch the lower uterine segment, and cause separation of the unstable capsular decidual attachment.

There is no doubt that the cyclic or exaggerated rhythmical action of the uterus which occurs every menstrual period is continued to some extent during pregnancy, and this may explain why the bleeding in some cases is recurrent with several weeks interval. The uterus is more easily sensitized at the time a menstrual period is due. Rupture of a semicircular sinus in the placenta is suggested as a cause of the hemorrhage.

FREQUENCY OF PLACENTA PREVIA

The average occurrence is one in five hundred cases. Most of the statistical information comes from obstetrical hospitals where emergency cases are dealt with, and it is difficult, therefore, to gauge the true rate of occurrence of the condition. Many cases of placenta previa must abort in the earlier months of pregnancy and are therefore not recognized.

PARITY

Placenta previa is said to be more frequent among multiparæ, especially where pregnancies have followed in rapid succession.

TYPES OF PLACENTA PREVIA

For clinical purposes placenta previa may be classified in two main groups:

1. *Complete,* where the placenta completely covers the internal os. As a rule a complete or central placenta is developed more in one side of the uterine segment than on the other, so that a complete centrally situated placenta is rare.
2. *Incomplete,* which has two subdivisions: a, marginal, where a portion of the placenta overlaps the internal os or is implanted at its side, and b, lateral, where the placenta extends to the lower uterine segment but does not reach the internal os. The marginal type is more common than the complete.

No hard and fast classification can be made, as the position of the placenta varies with the degree of dilatation of the internal os. A placenta may be complete at the beginning of labor, and become marginal as dilatation progresses. The degree of overlapping must be carefully considered when deciding upon methods of treatment.

SYMPTOMS OF PLACENTA PREVIA

Hemorrhage is the chief symptom if not the only one in most cases. It occurs without any warning. It is seldom the result of undue exertion. It may commence as a sudden gush of blood when the patient is at rest or even asleep. There may be a continuous or intermittent trickle of blood, or brownish discharge, for days or even weeks. This may be followed by severe and sudden hemorrhage. Hemorrhage may begin at the twenty-eighth week but is more liable to occur nearer term and when labor begins. It may occur, cease, and recur at intervals of four or five weeks as if influenced by the recurrent activity of the ovary. In some cases the patient is collapsed and suffers from shock within a few minutes of the onset of the hemorrhage. Death may occur before medical assistance can be obtained. Apart from labor, pain is not a symptom.

EXAMINATION AND DIAGNOSIS

In the majority of cases the patient appears perfectly healthy if examined before any undue loss of hemorrhage has taken place. There is an absence of symptoms or signs of toxemia, such as headache, nausea, dimness of vision, edema and albumin in the urine. It must be remembered, however, that

these may be present in some cases where placenta previa is a complication of toxemia.

PLACENTA PREVIA SUSPECTED DURING PREGNANCY

In cases where placenta previa is suspected from the symptom of slight hemorrhage, the abdominal examination may be perfectly normal. In some cases it is possible to auscultate the placental *souffle* in the lower uterine area. This sign can be confirmed on vaginal examination and subsequently at labor. It is not always to be found, as the placenta may lie behind the fetus, but when present it is of use as a method of diagnosis.

The fetal parts are felt without any difficulty unless the uterus is contracted. The fetus may be in its normal situation with the head engaging in the pelvis. Sometimes it is in a breech or transverse position and it is said to be due to obstruction of the placenta in the pelvis. It is impossible to be certain of the cause of the malpresentation, as so many cases of hemorrhage occur when the fetus is immature and in process of turning. If allowed to go on nearer to term it would probably turn into its normal head position. The fetal heart sounds are present unless the hemorrhage has been severe. There is seldom any intrauterine hemorrhage.

On vaginal examination an undue softening of the cervix and a pulsating boggy swelling may be felt in the vault of the vagina or in the fornices if the cervix is closed. It may be impossible to feel the presenting part of the fetus and clots may be found in the vagina. If labor has commenced there will be an increase in the hemorrhage during the expulsive uterine contractions. If one or two fingers can be introduced into the cervix, the placenta can be felt and distinguished from blood clot by its firm resistent consistence. Direct palpation of the placenta through the internal os is the most accurate method of making a diagnosis of placenta previa.

Blood pressure may be lowered if hemorrhage has been severe. A high blood pressure would indicate the presence of toxemia. Other evidence of toxemia should be looked for, and a careful analysis of the blood and urine made if time allows.

If the hemorrhage is from a normally situated placenta it may be internal, and in such cases the uterus is very tender, distended and has a characteristic wooden feeling on palpation. The fetal parts are not felt and the fetal heart sounds are absent. On vaginal examination the placenta cannot be felt, although in some cases it is difficult to distinguish blood clot from placenta unless it can be easily broken up and removed by the examining finger.

If there is any difficulty in making a diagnosis it is better to treat the condition as one of placenta previa, as it is of more frequent occurrence. With prompt treatment a fatal ending may be avoided.

It is seldom that placenta previa can be mistaken for rupture of the uterus, which rarely occurs unless from direct violence until labor has been in progress for some time. Rupture occurs when there is some diseased condition of the uterus or definite obstruction to the progress of labor. Previous hemorrhage is rare and the placenta cannot be felt in the lower zone of the uterus. Hydatidiform mole occurs earlier in pregnancy, and the hemorrhage is watery and blood stained with possibly detached portions of the chorionic cysts.

PROGNOSIS

The outlook in the majority of cases of placenta previa is serious. The future welfare of the patient depends upon the position of the placenta and the amount of hemorrhage that has taken place. It is obvious that a patient with a complete placenta previa will run much greater risks than one with a lateral insertion. Hemorrhage is rarely fatal at the first attack, but the earlier the hemorrhage occurs in pregnancy the greater risk of its recurrence. The patient may become extremely debilitated before labor occurs. Much depends upon the amount of hemorrhage and the presence of uterine contractions. The facilities for obtaining skilled aid and prompt treatment are a large factor in the prognosis of the condition.

The maternal mortality averages from eight to ten per cent., although the Rotunda Hospital publishes a mortality rate as low as three and six tenths per cent. The mortality in the Rotunda Field Hospital unit is about six per cent. The majority of deaths are due to hemorrhage or sepsis. In the unit one death was due to hemorrhage and collapse four hours after Cæsarean section, and one to coliform infection, with pneumonia on fifteenth day. A low insertion of the placenta predisposes to a septic condition and manipulative treatment also raises the risk.

The resistance of the patient is lowered by the antepartum hemorrhage. Lacerations of the cervix and vagina are frequent. The uterus may be inert from collapse and blood clot may be retained and become a source of infection.

Primigravidæ with a rigid cervix are more difficult to treat than multiparæ with an easily dilatable os.

Larcerations of the cervix and vagina are not infrequent. Although postpartum hemorrhage is a possible complication, it seldom occurs, but a small loss may easily prove fatal. The placental stage as a rule is rapid. Sometimes the placenta is delivered immediately after the extraction of the child. The placenta is of average size and weight.

FETAL WELFARE

If placenta previa is serious for the mother it is in most cases ultimately fatal to the child. Over two thirds of the deliveries are stillbirths, and many only survive a few hours or days. In the unit out of forty-three deliveries there were twenty-five stillbirths; twelve were due to prematurity, hemorrhage and version; two to hemorrhage and shock; two to prolapsed cord after version. In the nine remaining cases the fetus was dead before admission of patient.

The chief causes of death are prematurity and antenatal asphyxia from separation of the placenta or undue pressure upon its circulation. About seventy per cent. of the infants are born prematurely, either due to the spontaneous onset of labor or to the induction of labor as a means of treatment for hemorrhage. Seven survived birth but died within forty-eight hours. Twelve went out of the hospital alive.

FETAL PROGNOSIS

Podalic version, although the best method of controlling the placental hemorrhage is often followed by death of the fetus. During the operation the dilatation of the cervix detaches part of the placenta and

causes more hemorrhage to take place with asphyxia of the fetus. The manipulations may cause strangulation of the cord or prolapse may occur, owing to the low insertion of the placenta. The breech may control the hemorrhage but its pressure may obstruct the fetal circulation in the placenta and cord.

Malpresentations may also endanger the prospects of the child. The prognosis of the child's life depends upon the amount of hemorrhage, method of treatment chosen and its prompt application.

PART II: TREATMENT

In the present state of our knowledge the prevention of placenta previa is impossible. The utmost that can be done is to diagnose the condition early and prevent its consequences. The interests of the mother should be regarded as paramount. The life of the fetus is at best precarious. Each case must be considered on its merits. No hard and fast rule can be laid down. The simplest treatment is the best as it gives the most successful results in the hands of the majority of practitioners.

It must be remembered that placenta previa is like a pent up dam which may burst at any time, causing death and destruction. When hemorrhage occurs the practitioner must decide the course to adopt—whether to apply active treatment or to leave matters to take their course, keeping the patient under careful observation.

In noninstitutional practice it is a safe policy to deal with the condition promptly when the first hemorrhage occurs. If, however, the hemorrhage is slight and diagnosis doubtful, the other alternative may be adopted. The patient should be warned, however, of the danger and arrangements made whereby prompt and skilled assistance may be obtained should hemorrhage occur. This may happen suddenly, accompanied by the death of the fetus and possibly the mother. Even a patient undergoing observation in hospital may lose her life within a few moments of the onset of severe hemorrhage.

In treating placenta previa much depends on the type to be dealt with. There is a vast difference between the complete or central variety, on the one hand, and the marginal or lateral, on the other. A practitioner who is called upon to deal with a complete condition is faced with a most serious problem. I now propose to describe the different forms of treatment and the best method for each period.

If the hemorrhage is slight and recurring at intervals of several days, and the pregnancy is not advanced as far as the thirty-sixth week, the patient may be kept in bed with precautionary arrangements at hand for immediately dealing with any serious hemorrhage. By this means it may be possible to allow the pregnancy to continue until the thirty-sixth week or after, or, in other words, until the child is given a chance of survival. A child born before the thirty-sixth week may be alive, but when birth is complicated with placental hemorrhage its chances of surviving for more than a few days are small. This line of procedure is only to be adopted in cases of incomplete placenta previa, or where this complication is suspected but not diagnosed with any degree of accuracy.

In cases of complete placenta previa, where the diagnosis is sure, no time should be wasted in carrying out expectant treatment. The condition is one of extreme urgency requiring immediate interference. As the placenta entirely blocks the outlet of the uterus, it is obvious that birth of the child cannot take place unless perforation of the placenta is performed, or separation from the wall of the uterus is brought about. Such treatment will almost inevitably lead to the death of the infant before delivery is completed. In order, therefore, to obtain a living child Cæsarean section is the only operation which gives successful results. Delivery by the vaginal route has a fetal mortality of almost one hundred per cent. But as the interests of the mother must be considered before those of the child, the practitioner must decide upon the advisability of performing the operation and the risks involved.

Cæsarean section is usually advisable if the case is one of complete placenta previa, the pregnancy is at term or after the thirty-sixth week, no previous vaginal manipulation having been made, and the fetus is alive. Also in cases where hemorrhage has not been so severe as to cause collapse and the major operation might inevitably increase the degree of shock. The operation is indicated more frequently in an elderly primigravida than in a multigravida, owing to the greater rigidity of the cervix in the former case, and to the less likelihood of subsequent pregnancies.

The operation is therefore contraindicated when the child is dead or so premature as to give little hope of survival for more than a few hours or days; when the mother is suffering from severe collapse and shock. In the latter condition the fetus is rarely alive so that its interests may usually be disregarded, and in cases where packing of the vagina has been performed, forceps applied or version attempted by the vaginal route. In cases of infective conditions of the vagina or cervix Cæsarean section is usually contraindicated, but when the fetus is alive and near term the risks involved may be compared with those which might follow manipulations of the undilated cervix with inevitable loss of the infant's life.

No hard and fast rules can be laid down with regard to the dangers of sepsis in Cæsarean section. The operation has occasionally justified itself by the production of a living child and complete recovery of the mother, even in the case of patients with lowered resistance. The dangers consequent upon delivery by the vaginal route may be greater than those which may follow operative interference in potentially septic cases.

The necessity for hysterectomy with the object of preventing postpartum hemorrhage or sepsis must be decided when considering the desirability of Cæsarean section; it is very rarely required.

The drawbacks of a prolonged operation, as well as the consequent sterilization of a young patient, all must be taken into consideration. The latter result requires serious thought as the infant does not always survive the operation, and placenta previa is rarely recurrent in the same patient. Besides, apart from the abnormal situation of the placenta, the uterus is usually healthy unless weakened by prolonged or severe hemorrhage. Hysterectomy, therefore, is rarely necessary in these cases. If required, then Cæsarean section has been an unjustifiable operation in itself, and better results for the mother would

have been obtained by the less radical method of version even if the infant had not survived.

If the child is dead or Cæsarean section otherwise contraindicated, treatment should be carried out according to the method to be described under those of incomplete placenta previa. The same applies if the pregnancy is before the thirty-sixth week or near or at term. On examination of the patient we must ascertain if the patient is in labor.

BEFORE LABOR WITH AN UNDILATED CERVIX

If severe hemorrhage has occurred before term and labor has not begun, our first endeavor should be to induce dilatation of the cervix as soon as we have decided upon active interference. In a primigravida the cervix is usually somewhat firm in consistence and the os completely closed. In a multigravida, on the other hand, it is often open and admits a finger without difficulty.

After examination it must be decided whether the cervix should be dilated by slow or rapid methods. As the chief danger in these cases is hemorrhage, two points must be remembered: first, that whatever treatment is decided upon it must not involve laceration of the cervix or further separation of the placenta. Therefore, rapid dilatation of the cervix by forcible means is not generally employed. A patient weakened by severe antepartum hemorrhage is liable to collapse if postpartum hemorrhage occurs, no matter how slight.

The aim of the medical attendant should be the immediate control of the hemorrhage and the postponement of delivery if possible until the mother has recovered from collapse. In this way satisfactory results will be obtained as the uterus will contract when labor occurs and there will be less risk of postpartum hemorrhage.

The hemorrhage may be controlled by what may be described as first aid means, that is, by the application of direct pressure, by packing the vaginal fornices with wool or gauze, or by the bringing down a leg of the fetus and using the buttock as a compressor for the placenta, as hereafter described in more detail. The introduction of dilating bags may also be employed for the same purpose.

It may be possible in some cases to rupture the membranes and then induce the head to fix in the pelvis and so control the placental separation, but this is rarely of much use where the cervix is not dilated and the patient not in labor. Also the head of a premature fetus is not a satisfactory compressor owing to the difficulty of fixing it, and its extreme compressibility. Cases have been described by Willett in which the use of a clamp to the scalp of the fetus and the attachment of a weight, has brought about satisfactory results by fixing the head in the pelvic cavity.

If the os is open and the cervix unduly softened as is probable, the patient may be anesthetized and two fingers gently introduced into the cervix and a leg brought down. This, however, is not always possible and more especially in primigravidæ is it difficult without incurring the risk of laceration.

Packing the vagina is a useful method. It has several advantages, the chief being that with counter pressure of a pad and binder on the abdomen it controls the hemorrhage and at the same time by its reflex action may induce contractions of the uterus.

That stimulation of the cervix and vagina by digital examination causes uterine contractions is frequently proved in the antenatal clinic in ordinary cases of early pregnancy. The uterus may feel soft and flabby on abdominal examination, but when a vaginal examination is carried out the body of the uterus becomes harder and is felt to be in a state of contraction.

Packing the vagina is also of service as a temporary method of treatment when the patient has to be conveyed by ambulance to a hospital or nursing home for further treatment. That there are risks of sepsis after packing no one will deny, but they are not so formidable as the immediate danger from hemorrhage. Although it has been stated that packing is useless unless very tightly performed, there is a risk of lacerating the vaginal mucous membrane by undue pressure and distention. This has to be considered and the packing material should not be introduced in too large a quantity.

The patient is anesthetized and the vulva and vagina disinfected, a posterior and anterior speculum is introduced, the patient being in the lithotomy position. Tampons of sterilized wool wrung out of an antiseptic solution are taken one by one in a pair of pressure forceps and gently packed into the fornices until the cervix is completely surrounded and this is continued until the capacity of the vagina is reached. Sometimes it is possible to introduce a tampon into the cervix and so assist further dilatation, but care must be taken not to cause further separation of the placenta. A pad of wool and a T bandage are applied to the vulva and a counter pressure pad and binder on the abdomen. Gauze can be used instead of wool but it is more expensive. Bismuth gauze is the best as it does not easily decompose when left in the vagina for some time. It is also more easily introduced and removed than the wool tampons. Tampons may be tied on a string kitetail fashion, thus being more quickly removed.

The patient is left quietly in bed until uterine contractions occur when the tampons may be expelled spontaneously. If labor does not take place the tampons can be removed in six to eight hours and a fresh supply introduced if the cervix is still undilated, but this may mean a second administration of an anesthetic, which is undesirable unless version is to be performed. It is advisable to leave the tampons in the vagina for ten to twelve hours as the longer time involves little additional risk. Repeated packing of the vagina seems to increase the risk of sepsis more than a single application. Therefore it is better to leave the packing rather longer than generally advised by most authorities.

If labor takes place or the cervix is found to be dilated or even sufficiently softened to permit of manual dilatation, version is performed.

VERSION

This usually is performed under anesthesia and is a combination of abdominal or external version and the extraction of a leg through the cervix by the vaginal route. For this reason rupture of the membranes is essential before the operation can be completed. External version is performed by an assistant if the head is presenting, the fetal buttocks are made to lie over the brim of the pelvis or if possible

pushed into its cavity. The operator introduces two fingers of the hand (corresponding to the side to which the fetal abdomen is directed) into the cervix, ruptures the membranes with a pair of forceps or stilette, and grasps the anterior foot and pulls it out at the vulva, where it may be fixed by a piece of wool and gauze round the ankle.

It may be necessary in some cases, where the legs are extended along the trunk, or where external version has not been complete, to dilate the cervix further and push the fingers up into the uterus before the foot can be properly reached. In some cases where there is great difficulty in reaching the fetal lower limbs, and where greater dilatation of the cervix has taken place, it may be necessary to introduce the whole hand into the uterus before the foot can be brought down. If it is a case of complete placenta previa, the fingers must perforate the placenta. If incomplete, the fingers are passed up at the side opposite to where the placenta is attached. By traction on the foot the buttock is brought down and effectively compresses the bleeding area. If hemorrhage should continue, traction on the foot will bring about its control. It is not advisable to attach a weight to the foot as the additional force may lacerate the softened cervix or lower segment. The introduction of the fingers may lacerate the cervix or cause further separation of the placenta with a considerable gush of blood, but this will be controlled as soon as the operation is completed. The foot is distinguished from the hand by the heel, the absence of the easily abducted thumb and the ease with which the foot is flexed upon the ankles.

An abdominal binder is applied after version and the patient kept at perfect rest. After the application of vaginal tampons or in cases of version, the usual restoratives for collapse and shock are applied when necessity calls for them.

If the onset of labor is delayed extreme congestion of the fetal leg and buttock may take place from pressure, but if the child remains alive this usually passes off in a few days after birth when treated with warmth and rest. When labor occurs delivery should not be hurried. The usual methods of breech delivery are employed. If the presentation is a breech or a transverse, at the onset of the symptoms the necessity for abdominal version does not arise and the vaginal manipulations are as a rule sufficient.

It is said that placenta previa is a cause of breech and transverse presentations, but this has not been proved. If these presentations are recognized before the thirty-sixth week, it is likely that the fetus is in an unstable condition and would rotate to vertex position if pregnancy were allowed to advance. In normal conditions breech presentations are frequently found up to the thirty-fourth week. Transverse presentations in the majority of cases are those of a breech in the process of turning spontaneously.

The value of version is controversial, but for practical purposes it is the best method of treatment. Version needs no apparatus and the patient does not require the continuous presence of the medical attendant. The risk of postpartum hemorrhage and of sepsis is lessened. Version is a difficult operation where the cervix is rigid, and is unsuitable if the uterus has contracted down over the fetus. For this reason early rupture of the membranes is to be avoided unless it is considered that the child may be born by a vertex presentation.

(*To be continued*)

The Obstetrician

NICHOLAS SCHILLING, M.D.
North Hampton, Iowa

At a time when the champions of mediocrity in the practice of medicine are busy devising ways and means of how not to do it, it may be worth while to dwell for a moment on a few obstetrical aspects of medical education. The mere circumstance that these observations are the reflections of an actual field worker should not invalidate their soundness.

Throughout the history of obstetrics two schools of practice have contended for approval. Representatives of the one have much faith in the healing powers of Nature, while their opponents maintain that the obsession to do nothing for the woman in labor has been the cause of much unnecessary pain and irreparable invalidism. The latter more radical opinion was tremendously advanced by the discovery of general anesthesia and the practical elimination of pathogenic microorganisms from surgical wounds. Moreover, it is no longer an article of faith that the suffering of childbirth is a matter of purification and atonement. Nowadays, a woman who is flickering towards extinction from the effects of futile labor pains will demand relief. That it better be promptly afforded is the insistent and ominous attitude of neighbors, friends and relations. It will get us nowhere to assure them that the patient is engaged in performing a normal biological function and that it is best to "let Nature take its course." To emerge from the ordeal bruised and injured beyond repair, possibly without a baby and barely alive, is no longer considered a satisfactory dénouement in a confinement case. And, only an extreme optimist could contemplate such a result and still continue to "kid himself" into the belief that such a performance constitutes an adequate exhibition of the science and the art of modern obstetrics.

Much systematic missionary work has been done to protect the public against unscrupulous and incompetent general surgeons. The itinerant fee splitting socalled surgical expert has been thoroughly discredited. No such safeguard has been provided for the expectant mother. While our National Government has recognized the need of reform in obstetric practice, a large proportion of the laity and of the medical profession still seems to take it for granted that any old *mænad* of either sex is fully competent to preside at a confinement. Much of the obstetrical

practice done today is about as skillful and scientific as the surgery performed by barber surgeons several centuries ago.

It is true, of course, that nineteen out of every twenty women in this country would deliver themselves without or in spite of any artificial aid. But this very circumstance tends to encourage perfunctory methods of practice. Too much is taken for granted and the element of surprise is introduced. And, to be taken by surprise is to be at a disadvantage. This handicap can be avoided only when it is borne in mind that obstetrical cases are proverbially uncertain in their clinical behavior. In a moment obstetrical shock, an embolus or a bit of retained placenta may convert the most placid puerperal situation into a complicated and dangerous one.

In real dystocia the problems requiring solution are often among the most difficult in all medicine. Borderline cases of pelvic contraction, eclampsia, placenta prævia and tumors of the pregnant uterus are conditions surely calculated to measure exactly the professional stature of the attending physician. Much experience and fine judgment are essential to determine the indications for the administration of pituitrin or for the application of forceps. Whether a version is to be done or whether the interests of both patients are best served by Cæsarean section are, in a given instance, questions that will tax to the utmost the resources of even the master in obstetrics. On the correct solution of the problems enumerated will depend the happiness of a family. The life of a mother and a child are at stake. In other words, to conduct a woman with a minimum of pain and a maximum of safety through a pregnancy and labor is a task momentous and important beyond all economic computation.

It is an old observation that approximately fifty per cent. of all gynecological practice is the direct result of poor and inadequate obstetrics. Government statistics show that twenty thousand women die annually in the United States from complications incident to childbirth. It is very properly contended that these figures are appalling and it is imperatively demanded that they be improved. The presumption is that we shall improve our statistics only by more efficient practice. This will not be accomplished by the monotonous repetition of lugubrious platitudes about the passing of the general practitioner. Nor will it help very much to erect pretentious and stately hospital buildings. In marble corridors and decorated walls there is no conscience, no sympathy, no skill. Physical prowess, hirsute adornment, poise, dignity and an unctious demeanor are all singularly unavailing as a means to improve statistics in childbirth. The one factor which can influence favorably the life expectancy of maternity patients is ministration by the well trained, intelligent, aseptic human hand. That good obstetrics can be done anywhere has been abundantly demonstrated not only by individual physicians in private practice but more spectacularly by the outpatient departments of lyingin hospitals.

The midwife, male and female, blessed with generous physical outlines, fortified with numerous accessory accomplishments and equipped with assurance unlimited is, no doubt, an imposing and awe inspiring institution. But, really, we cannot depend on it to improve results in obstetrical practice. Here, when there has been no improvident delay, the clinical fate of mother and child is determined by the degree of skill exhibited by the doctor in charge of the case. The detection of concealed hemorrhage, the appreciation of the early symptoms of eclampsia or the recognition of a defect in the placenta are not a "job" for even a male midwife. It should be universally admitted that these are problems which require for their solution all the resources of the most observant and skillful obstetrician. In obstetrics, more than in any other human enterprise, a little knowledge is a dangerous thing. Before any man has the moral right to assume independent charge of a confinement case he should have had the advantage of at least three years of special and thorough training in obstetrics. Adequate preparation for his unique and responsible task is the least his ambition and conscience should consider. In that case he will be more concerned about the welfare of his patients than about the fees he may command.

Moreover, it must be emphasized that the most valuable attainments of an expert in the art of obstetrics are not all of an ultraconservative order. There are obstetrical situations when prompt and skillful surgery will alone meet the indications and improve statistics. To postpone Cæsarean section until despair, exhaustion and possible infection have supervened is very poor obstetrics. It is, of course, equally important to realize that a general surgeon without adequate training in the art of obstetrics may become a real menace to a woman in labor. A working knowledge of immunity and infection will enable the accoucheur to speculate with more interest and intelligence on the various phases of preventive vaccination and the vagaries of bacteria as often exhibited in the birth canal during and after childbirth. It will help him to explain why perfunctory and repeated vaginal examinations are likely to be so disastrous in their consequences, especially when they immediately precede Cæsarean section.

Then, too, there is certainly no occasion to deny or to belittle the self evident proposition that the specialist in obstetrics needs to take a sympathetic personal interest in his patients and that clinical intuition and common sense must sometimes modify his more scientific conclusions. Just why it is so generally taken for granted that the man who knows his stuff is necessarily deficient in simple human pity is not quite clear. Possibly it is due to the fact that there is a type of performer whose sole stock in trade consists in backslapping and jollying the relations. To be a clinician at the bedside, a scientist in the laboratory and an artist in the technical execution of his work are the ear marks of a real obstetrician. That no one else shall assume his responsibilities is the divine right of the woman with the badge of maternity upon her.

The qualifications enumerated will not appear unreasonable when we bear in mind the unique circumstance that the clinical fate of obstetric patients is determined not by the learned consultant who may be called in late to view the tragedy, but by the doctor who manages the first stage of labor.

It should be gratifying to all concerned that there can be nothing more characteristic than the determination of the average American husband and father to provide the best available medical attention for his

family. It is true that he is not always able to differentiate the merits of a real doctor from the tortuous designs of a grinning mountebank. But his intentions are the best and the moment he realizes what it is all about mediocrity in the practice of obstetrics, for the want of patronage, will fade out of the landscape. This consummation will not appear so remote when we contemplate in all its manifold activities the achievements of modern public health work. Antenatal clinics will improve statistics by demonstrating to all concerned that it would be about as logical and safe to employ a barber to do an amputation as it would be to have any old *mænad* preside at a confinement.

Pelvic Varicosities

A Discussion of Their Origin, Symptoms and Treatment

HARRY PIKE, M.D.
New York

Notwithstanding the advance of our knowledge of the diseases of the female generative organs, there still remains a group of syndromes offering great difficulty in diagnosis. Many of these symptom complexes undoubtedly have their origin in disturbances of the pelvic circulation. A common lesion of this nature is pelvic varicosity.

Although varicose veins of the pelvic organs are not uncommon in females, this subject has received scant attention in textbooks and the current literature. Nevertheless it is one of considerable importance, especially in view of the fact that the condition can usually be remedied by operative means.

Richet in 1860 described tuboovarian varicocele, or varicosity, as a clinical entity. In America, the initial paper on this subject was by Dudley (1) in 1888. Since that time, there have been few American contributions, the notable exceptions being those by Emge (2, 3), Kelsall (4), and Darnall (5). Reference should also be made to the paper by Fothergill (6) in England.

For a long time, I have been interested in pelvic varicosities as a cause of gynecological disorders. In many cases, clinical observations on the operating table have demonstrated that many of the symptoms experienced with multiparæ with enlarged uteri and displacements of long standing are due not to inflammatory changes but to disturbances in the venous circulation of the pelvis. These venous changes may produce the same symptoms as adnexal disease.

POINTS IN ANATOMY

The anatomical fact that the pelvic veins are without valves predisposes them to overdistention. At certain vulnerable points, the support of their walls is insecure. This condition is most apparent in the ovarian circulation, less so in that of the uterine venous channels. The ovarian veins and their pampiniform plexuses are supported by a delicate network of intrinsically interwoven strands of elastic fibers and slender, smooth muscle bundles. This support is attached to the peritoneum at one end and the basal ligaments of the pelvic fascia at the other. It is not strong enough to withstand prolonged vascular distention.

The ovarian circulation is more subject to varicosities than the uterine. The veins swing in a sort of peritoneal hammock. Just before they reach the pelvic brim, they are subject to pressure from the sigmoid and cecum. The left ovarian vein terminates in the renal vein, which it joins at right angles without a protecting valve. The right ovarian vein enters the inferior vena cava. Here there is a valve, the only one in the venous circulation of the pelvis. Whenever there is stasis in the ovarian circulation, the long column of venous blood extending from the ovary to the vena cava or left renal vein gravitates to the most dependent portion; namely, the pelvic course of the vein.

Any added strain on the ovarian circulation necessarily aggravates the embarrassment already existing by virtue of anatomical peculiarities of the ovarian veins. Part of the burden of returning venous blood is thrown upon the adjacent peritoneal veins. The resulting pressure soon affects the widely ramifying nerve fibres accompanying the bloodvessels and bearing so intimate a relation to the peritoneum. The pressure on these nerve fibres results in deep seated pain, most commonly located in the ovary; hence the term "ovarian neuralgia." The pain may radiate upward or downward, and the patient may experience a high lumbar backache, a bearing down sensation in the cul de sac, or a dull ache on the posterior surface of the thigh. As soon as pressure is relieved by the recumbent posture, the pain is diminished or disappears.

ETIOLOGICAL FACTORS

Varicosities of the female pelvis are most commonly observed between the ages of the late twenties and the late thirties. Years ago, Skene stated that it occurs more frequently in middle life; he never saw a case in a patient under twenty-five or over sixty. The age incidence suggests that menstruation and parturition are important etiological factors.

I have frequently observed thickenings on pelvic examination, leading to the diagnosis of pelvic cellulitis, which disappeared on the operating table. In parametritis, venous congestion is pronounced. In this common disturbance, a protective exudate is formed. Venous hyperemia is followed by transudation of serum, diapedesis of red blood cells, phagocytic migration of leucocytes, pus elaboration and proliferation of connective tissue cells. These changes take place within the folds of the broad ligament. As the connective tissue organizes and the scar tissue contracts, fibrous bands are formed that interfere with the venous outflow. The result is the formation of varicosities.

In pelvic cellulitis, also, tremendous venous enlargement is found at operation.

Following Dudley, the etiological factors may be divided into two groups; namely, 1, constitutional and 2, mechanical. The various factors under these headings may be classified as follows:

CAUSES OF PELVIC VARICOSITIES

1. *Constitutional.*—a. Subinvolution of the ovarian and uterine vessels, prolonging pelvic engorgement. b. Relaxation of the pelvic tissues, resulting from injury. c. Poor state of general health. d. An unhealthy condition of the venous walls, due to inflammatory changes and aggravated by the anatomical facts of absence of valves in pelvic veins; the result is an increase of the pressure in the pelvic veins when the woman assumes the erect posture.

2. *Mechanical.*—a. The anatomical peculiarities of the ovarian veins; the left, because it empties into the renal vein at right angles and has no valve, is more frequently involved. (In males, varicocele is more common on the left side for the same reason.) b. The great length of the ovarian veins. c. Habitual constipation with intestinal stasis. d. Uterine displacements.

It is generally agreed that pregnancy is the most important factor in the production of varicosities. Faulty involution of the uterus prevents the dependent pelvic circulation from returning to a normal state. After abortion there is likely to be subinvolution, because uterine development has been interrupted in this condition. The pelvic circulation may remain in a state of stasis for a long time, after which permanent distention of the veins may take place.

Next in importance to pregnancy as an etiological factor is uterine displacement. The resulting stasis leads to the formation of a vicious circle; that is, the displacement leads to stasis, which in turn aggravates the pathological condition of the uterus. Consequently, the size and weight of the organ are increased, and hypertrophy and hyperplasia, ultimately fibrosis, take place. This disturbance affects also the cervix uteri and the ovaries. It is usually designated as chronic metritis, cervicitis and oophoritis.

Because of the fact that sclerocystic ovaries are commonly found in association with pelvic varicose veins, the ovaries have for some time been considered the cause. It is true that pelvic symptoms disappear after the removal of such ovaries; this fact, however, does not prove their etiological relation. When the ovaries are removed, the pelvic circulation is necessarily interrupted; therefore relief from the symptoms of pelvic varicosities would be expected, regardless of the origin of these lesions. The relief comes from the destruction of the ovarian veins, not the extirpation of the ovaries. If the varicose veins alone are removed and the ovaries left intact, the reestablishment of venous drainage results in a restoration of normal conditions in these organs.

Emge (2), in a series of one hundred cases of pelvic varicose veins, found many sclerocystic ovaries. When the varicose veins were removed, he found that ovarian function was restored and the pelvic symptoms disappeared.

SYMPTOMATOLOGY

Varicosities in the female pelvis may produce a great variety of symptoms. As the symptoms are likely to vary greatly according to individual cases, it is impossible to give a hard and fast exposition of the symptomatology.

Only in about fifty per cent. of the cases is the diagnosis made. The condition is recognized preoperatively in about twenty-five per cent. of cases, and even then the diagnosis is tentative. In twenty-five per cent. of cases, the diagnosis is made on the operating table when the condition has not previously been suspected.

Pain is the most common symptom. It is located in the extreme lateral portions of the pelvis; it is more common on the left side, presumably because of the anatomical peculiarities of the left ovarian vein and the pressure of the sigmoid. It is constant but indefinite. Exertion, sexual relations, constipation and premenstrual engorgement aggravate the pain. Rest in the recumbent position alleviates it.

Backache is second in importance. The pain is diffuse, present on rising, increasing during the course of the day, and subsiding when the patient rests in the recumbent position. According to the chronicity of the pelvic stasis, the backache progressively increases in severity.

Another important symptom is leucorrhea, which is a manifestation of congestion, not infection.

Ovarian neuralgia is another complaint. Previously in this paper, the anatomical relation of ovary to peritoneum and pampiniform plexus of veins and the mechanism by which venous distention may thus produce pain by pressure on the nerve fibres that accompany the vessels has been pointed out. In cases of ovarian neuralgia, pelvic examination is likely to disclose an enlarged and tender ovary.

Menstrual irregularities and dysmenorrhea appear in cases associated with prolonged pelvic stasis. Sometimes the menstrual cycle occurs at increasingly shorter intervals, and at times the period of flow is prolonged and accompanied by menorrhagia. The cause of the disturbed menstrual cycle is the ovarian congestion, resulting in overstimulation. As a result, there is hyperplasia of the endometrium. Since fibrosis interferes with the maturation of the graafian follicles and also the blood supply of the endometrium, the flow ultimately becomes irregular and scanty.

Many other symptoms may be elicited in the history, including dyspareunia, frequency of urination and leg ache. Frequent urination without nocturia or abnormal urinary findings points to an involvement of the vesical plexus. Leg ache is spoken of as a tired feeling along the backs of the thighs. It is present in advanced pelvic stasis, when there is pressure on the obturator nerve.

POINTS IN EXAMINATION

In examining patients for suspected pelvic varicosities, it is essential to have them assume various positions. In the dorsal position, the distention is relieved and the condition may be easily overlooked if no further examination is made. If palpation is made with the patient in the sitting position, an increased size of the vascular structure of the broad ligament may be noted. It is often difficult to definitely map out a varicocele; but, in many cases, distinct varicosities may be felt.

The color of the vaginal mucosa may give some

information. A bluish, thickened, excessively moist vagina is indicative of pelvic stasis. Vulvar and vaginal varicosities may be observed. Their presence points to the probability of similar lesions within the pelvis. In the early stages of pelvic stasis, the findings in the uterus on palpation suggest early pregnancy; later the uterus becomes large, bulky and hard.

SURGICAL TREATMENT

In most cases of pelvic varicosities, the symptoms can be relieved completely by operative means. Emge (3) cites various authors as having employed the following surgical measures: resection (excision) of veins; multiple ligation of veins; castration; resection and oophorectomy; resection or ligation of veins and ventrofixation; ventrofixation; and shortening of the sacrouterine and round ligaments. Emge believes that, since the fibroelastic suspensorium is intimately attached to the pelvic peritoneum which forms the covering of the basal ligaments of the generative organs, it is possible to obtain a normal control of the veins of these organs by increasing traction on this peritoneum. In his opinion, resection of veins is ordinarily unnecessary and should be confined entirely to varicosities that are the direct result of inflammatory lesions of the vessels in question.

Castano (7, 8) emphasizes the importance of early surgical treatment and employs an operation which aims to divert the blood from the veins in the broad ligament. He exposes the ilioovarian ligaments, brings the varicosed uteroovarian veins into view, ligates them above and below with catgut, and divides each vein between the ligatures. This operation he terms the "Argentine method."

CONCLUSIONS

1. Many obscure gynecological syndromes are due to disturbances of the pelvic circulation, especially varicosities.

2. Various anatomical peculiarities predispose to the development of varicose veins in the pelvis; namely, the length of the ovarian veins, the absence of valves, and the lack of support from the surrounding tissues.

3. The most important causes of pelvic varicosities are pregnancy and uterine displacements. The constitutional etiological factors include subinvolution of the ovarian and uterine vessels, relaxation of the pelvic tissues, poor general health, and an unhealthy condition of the venous walls; the mechanical causes, the anatomical peculiarities of the ovarian veins, their great length, habitual constipation and intestinal stasis, and uterine displacements.

4. The principal symptoms are deepseated pain, backache, leucorrhea, ovarian neuralgia and menstrual irregularities. Less common symptoms are frequent urination, dyspareunia and leg ache.

5. In making the pelvic examination, it is important to place the patient in various positions. If only the dorsal recumbent position is employed, the venous engorgement may subside and the varicosities be overlooked.

6. Complete relief from the symptoms may be expected after surgical correction of the lesions.

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1269 Grand Concourse.

Retinitis of Pregnancy

CHARLES GREENE CUMSTON, M.D.
Geneva, Switzerland

The retinitis of pregnancy is far less common than that of albuminuria, the former being met with about once in three thousand pregnancies. It is not more frequent in primiparæ and is more prone to occur during the last three months of gestation, very rarely in the postpartum. Its onset is slow, progressive, while the amaurosis develops very suddenly. Visual acuity diminishes in phases, offering various degrees from simple cloudiness to complete cecity. Early ophthalmoscopic diagnosis is essential in order to begin treatment as soon as possible. As to the objective examination there is the symptomatic trio, namely, papilloretinal edema, hemorrhage, and exudates. Papillary reactions are preserved but may be sluggish. The objective signs dominate the entire clinical picture; the visual disturbances may remain as they were at the beginning and in no way proportionate to the changes in the fundus; they above all depend upon the localization of these changes. A minute macular lesion will attract the patient's attention far more than a pronounced edema or hemorrhage in the neighborhood of the papilla.

It is only exceptionally that a retinitis improves as long as pregnancy continues, even by diet which ameliorates the general condition or prevents the advent of eclampsic crises. Sight continues to decrease or the diminished acuity remains stationary until the day of labor which ends the term of general accidents and those of the eye. Then normal visual acuity will return in a few months, although the prognosis of vision is darkened by the possibility of two complications, viz., atrophy of the optic nerve and detachment of the retina. The latter occurs in seventeen per cent. of the cases; usually it is bilateral, sometimes total,

but usually partial. There is a happy tendency to recovery, but when this takes place the vision is never what it was. Atrophy of the optic nerve develops in thirteen per cent. of cases and may result in cecity.

The prognosis of pure retinitis of gestation is far from having the gravity of that occurring in a pregnant woman with nephritis; nevertheless, it is to be guarded against, both from the vital and visual viewpoints. As to vision, the prognosis depends upon the extent and localization of the retinal lesions, the time of gestation when the ocular disturbances arise, and the rapidity of therapeutic interference. From the vital viewpoint, it must be recalled that death may ensue during eclamptic attacks, and gravidic retinitis is an index of a profound involvement of the organism, announcing the advent of serious accidents if early and active treatment be not resorted to. Another element in the prognosis that must not be overlooked is the possible persistency of nephritis after labor has taken place and also that the retinitis may recur in future pregnancies. The fetal prognosis is absolutely unfavorable, the mortality being about eighty per cent.

Treatment in the first place should be to prevent the accidents by careful supervision of any woman who presents signs—be they ever so slight—of gravidic toxemia, and secondly, to treat the retinitis. It is to be noted that the extent of organic involvement may be made by the ophthalmoscope.

The diagnosis of retinitis having been made, it is to be recalled that the maximum of prognostic gravity resides in the continuation of the pregnancy. It improves with spontaneous miscarriage and is more favorable still when induced miscarriage or premature labor is resorted to. The best vital prognosis can be given when artificial interruption of pregnancy is made. When it is remembered that the life of the offspring is so seriously compromised, it would seem only logical to interrupt the pregnancy as soon as the ophthalmoscopic signs of retinitis are detected.

Clinical Observations with Painless Childbirth by the Synergistic Method

D. DEUTSCHMAN, M.D.

New York

With the rapidly increasing number of neurotic women, as a byproduct of modern civilization, with their extreme sensitiveness to pain and their inability to tolerate physical or mental torture, there has never been a more persistent demand for the elimination or amelioration of the suffering associated with the process of childbirth. This justifiable demand coming from frightened, childbearing womanhood has stimulated the medical profession to the attempt to find a remedy for the production of a normal, physiological, painless course of uterine contractions during the process of labor. From time immemorial medical men have striven to eliminate the pain of childbirth and the achievement of this ideal aim of the pioneers of the profession constitutes a fascinating chapter in the history of modern medicine. Any method advanced for this purpose has always been met in the most enthusiastic manner, demonstrating definitely how anxiously the community is looking forward to the medical profession to facilitate the burden of parturition.

Many methods have been tried from time to time to regulate the pain of childbirth with varying results too often based upon empirical grounds rather than upon scientific facts. The encouraging results frequently obtained by some authorities failed in the hands of others. This failure to give uniform results in the attempts to eliminate the pain of childbirth is due to our lack of knowledge of the basic principle underlying the termination of gestation and the onset of labor. Of the numerous methods for the relief of pain of childbirth that have been advanced within the last decade there were two that have gained the widest interest of the profession as well as that of the laity. Those are the Freiburg method or that of Kronig and Gauss, which is based upon the combined effect of scopolamine and morphine, and the other one is the synergistic method of Gwathmey which is based upon the interaction of magnesium sulphate, quinine and ether.

TWILIGHT SLEEP

The former, which is commonly called twilight sleep, was introduced to the American medical profession, as well as to the laity of this country, on the recommendation of the two above named eminent obstetricians of Freiburg, who asserted that they had good results with the use of their method. How this method was received in this country, especially by the female population, is only a matter of recent history. One still remembers the formation of the numerous women's leagues, the press campaign, the pictures on the screens of the theatres and the daily lectures delivered by honest but incompetent laymen and women at the different department stores, for the purpose of disseminating the knowledge of this method among childbearing women.

This method was given a fair trial for a period lasting several months. But the results following its employment in the various hospitals were so disastrous, by increasing the fetal and maternal mortality that it had to be abandoned. It was almost unanimously pronounced a total therapeutic failure by the most competent and skilful obstetricians of the country, who had faithfully and punctually carried out the technic as described by the authors of this method. There were too many blue babies and too many postpartum hemorrhages. This medical illusion lasted only a comparatively short period and the women were tragically disappointed.

The other method mentioned, i. e., the Gwathmey

method, is based upon the synergistic action of various drugs to effect a form of analgesia without producing anesthesia and without interfering with the normal course of uterine contractions. This method, when properly carried out, tends to shorten the duration of labor by softening the cervix during the process of dilatation and saves the strength of the patient for the stage of expulsion. There are no bad effects on mother or child. The procedure is a comparatively simple one and does not require special skill and can easily be carried out at the hospital or home by any intelligent and patient physician.

The technic as worked out by the New York Lying In Hospital, where this method has been used for the last three years on a few thousands of cases, is as follows: The preliminary preparations consist in gaining the confidence of the patient by pleasantly emphasizing the importance of cooperating in this procedure. The patient receives a high soapsuds enema followed by a rectal irrigation of tepid water, until the return is absolutely clear. She is to be placed in a quiet room and, if no room is to be obtained, the bed should be screened. Her eyes are covered with a piece of cloth and the ears closed with cotton, so as to keep out all the external stimuli.

The active procedure is begun after the patient has advanced in labor to the stage of two and a half or three fingers of cervical dilatation with uterine contractions of six to seven minutes interval and of ten to twelve seconds in duration, when an intramuscular injection of two c. c. of fifty per cent. solution of magnesium sulphate combined with one quarter of a grain of morphine sulphate is administered into the gluteal, intrascapular or deltoid regions. This injection is to be given during one of the uterine contractions, care being taken not to inject the solution in the skin. If this injection produces too sedative an effect, wait until it is worn off before proceeding with the next step. If no effect follows the first injection within twenty minutes, another two c. c. of fifty per cent. magnesium sulphate solution without morphine is to be injected. After the slight drowsiness, which invariably follows the second injection and which is the effect desired, the patient receives a retention enema of a mixture consisting of twenty grains of quinine alkaloid, forty-five minims of alcohol, two and a half ounces of ether and a sufficient quantity of olive oil up to four ounces. Prior to the rectal instillation the rectum should be well lubricated with petrolatum or oil on a gloved finger and the entire anal region including the buttocks and upper parts of the thighs should have sufficient lubrication. The mixture should be warm before pouring it into the apparatus, which consists of a funnel, rubber tubing, glass tube, a Murphy regulator, for regulating the flow of the mixture, and a rectal tube. After the apparatus has been connected together it should be well lubricated with warm oil and the rectal tube inserted slowly, high up in the rectum over the presenting parts, care being taken not to insert the tube during a uterine contraction. The patient is placed on her left side with the hips slightly elevated to promote colonic absorption. After the mixture has been emptied, which should take about ten to fifteen minutes, the rectal tube is gradually withdrawn, instructing the patient to relax during the period of the removal of the tube and gentle pressure over the perineum should be exerted to help the retention of the mixture.

Following the administration of this retention enema the patient usually becomes drowsy, followed by a semistuporous condition, resting peacefully between the uterine contractions and only moaning faintly during the height of pain, the frequency and duration of which is not affected.

The patient is not to be disturbed with examinations for about two or three hours, during which time she should be carefully watched and be prepared for a precipitate delivery, which often happens, due the hastening of the first stage of labor apparently produced by this synergistic method.

If no analgesia follows the administration of the medicated enema mentioned above, a third injection of the two c. c. of fifty per cent. magnesium sulphate may be given within one hour after the rectal instillation, without any toxic effect upon mother or child. This additional injection fortifies the synergistic effect between the magnesium sulphate and ether and the patient is relieved of her pains of the uterine contractions during the stage of dilatation.

When the patient is examined after the rectal instillation the physician cannot help being impressed with the remarkable progress in the process of labor. The cervix is invariably found much thinned out or completely obliterated; the cervical dilatation almost complete and in cases of occipitoposterior, it is found to have undergone spontaneous rotation and the presenting parts frequently found on the perineum ready to be delivered, with the patient being in a state of complete rest and perfect calmness.

The effect of this procedure lasts about four hours, after which period it begins to wear off and, if the patient by this time is not ready for delivery, the whole treatment may be repeated, leaving out the morphine, without jeopardizing the health of mother or baby.

After the first stage has been completed the patient is either allowed to go through the second stage spontaneously, during which course she displays remarkable vigor, strength and energy in utilizing the intra-abdominal muscles in facilitating the expulsion of the baby, or the patient may be assisted by the administration of a little gas and oxygen or ether anesthesia and by the application of low forceps in the delivery of the newborn.

The fifty per cent. magnesium sulphate used in this method is for the purpose of analgesia as well as potentiating the therapeutic action of the ether, which is given in a nontoxic dose absorbed by the colon, without affecting the higher centres. However, I do not intend to delve any further into the merits or therapeutic demerits of the different ingredients employed in this method of treatment, neither do I wish to enter into theoretical details of comparative values of the different processes designed for the purpose of procuring a painless course of labor. I merely intend to report the clinical results and observations from the employment of a method, the principle of which has been worked out and used for the last two or three years at the New York Lying In Hospital, under the leadership of Dr. J. T. Gwathmey, who deserves the credit for attempting to solve the problem of perverted biology of painful parturition, on a rational and scientific basis.

The encouraging results obtained for the last few months from a number of cases in which the technic was properly carried out were uniform and highly satisfactory. I am almost tempted to state they were above expectation. Cases that failed in their results were those in which there had been a faulty technic. To illustrate this point I wish to report a few of my cases:

Case I.—Mrs. F. E., American born woman, twenty-eight years of age, cultured and intelligent; borderline case of contracted pelvis, para two. First baby, nineteen months old, was delivered in an occipitoposterior position after a dry and prolonged course of labor. The delivery was instrumental. She was admitted to the hospital at 10 p. m. Patient under great apprehension, fearing a repetition of the tortures of her previous confinement. She finally decided to have the baby by a Cæsarean section, in order to save the agony of her first experience.

Vaginal examination revealed a thick and long cervix, rigid in consistency; cervical dilatation close to three fingers, during a uterine contraction; membranes ruptured; head presentation, not well engaged in an occipitoposterior position. The condition was similar to that of the first labor. The uterine contractions took place about every six or seven minutes and were about twelve seconds in duration.

After having prepared the patient in the manner described above, which lasted about three quarters of an hour, at 10.45 p. m. she was given two c. c. of fifty per cent. magnesium sulphate with one quarter grain morphine, injected intramuscularly in the gluteal region. There was no visible change observed in the sensitiveness of the uterine contractions within a period of twenty minutes, when another injection of the magnesium sulphate without the morphine was administered. Within the next ten minutes following the second injection there was a marked form of analgesia produced, as was manifested by her attitude during the subsequent uterine pains. At a quarter after eleven p. m. the rectal instillation was administered. The patient became drowsy shortly after, resting peacefully during the periods between the contractions and moaning faintly towards the end of pains, that were unaffected, either in frequency or duration. About 2.30 a. m., i. e., about three hours after the rectal instillation, the patient was examined and the cervix was found completely obliterated, the cervical dilatation was complete and the head on the perineum in anterior position. The baby was delivered with low forceps under a light ether anesthesia, without the slightest effect upon baby or mother. One half hour later, when learning of the birth of the baby, she was the most surprised person living and expressed her deep gratitude for having been saved the pains of labor.

Case II.—Mrs. J. R., twenty-two years of age, born in this country, para one, was admitted to the hospital about 10 p. m., at the same time with the patient mentioned above. Examination revealed a long, thick, rigid cervix, about three fingers dilatation, membranes ruptured, cephalic presentation, slightly engaged in R. O. A. position, with pains every five or six minutes and about fourteen seconds in duration. She was extremely restless and excitable with every uterine contraction and it was impossible to control her paroxysmal attacks of hysterical manifestations. At 11 p. m., after the preliminary preparations, the two c. c. magnesium sulphate with the one quarter grain of morphine was injected intramuscularly. Within ten minutes following the injection there was a noticeable relief of the pains as evidenced by the patient's statement that she was much relieved and also by her changed behavior. At 11.25 p. m. the rectal instillation was administered and shortly after she became drowsy, resting quietly between the frequent and strong uterine contractions and moving and moaning during the pains, in a semi-stuporous condition. At 11:50 p. m., patient became restless and another injection of magnesium sulphate without morphine was injected. Patient immediately fell asleep and rested until 2 a. m., when bulging of the perineum was noticed and, when the patient was examined, she was found ready to be delivered. She walked to the delivery room, where she was prepared and allowed to go through a spontaneous delivery, without anesthesia.

It was remarkable to watch the patient, in a semi-stuporous condition, using the entire strength of her abdominal muscles in bearing down during every uterine contraction. She appeared to be rested and full of energy although in a state of drowsiness.

Shortly after the birth of the baby, which was perfectly normal, patient made the following remark: "The opinion of women that giving birth to a baby is painful is false."

Case III.—Mrs. E. S., young American woman, para two, first delivery was instrumental and prolonged, was examined at 11 a. m. at the hospital. She had a tender perineum, due to retention of a piece of unabsorbed suture material left from a perineorrhaphy of first delivery. The cervix was thick, rigid, long and lacerated. Dilatation about two and a half fingers, membranes ruptured, cephalic presentation, sagittal suture in a transverse direction and the head not well engaged. Patient was having pains every six minutes, about ten seconds in duration. She was extremely irritable, disagreeable in disposition and very much exhausted.

After the usual preparations she was given the two c. c. of fifty per cent magnesium sulphate with one quarter grain of morphine, at noon. Shortly after this injection her restlessness disappeared and an expression of self contentment appeared on her face and she became submissive to the instructions. She was peaceful between the pains and calm during the pains, which, she stated, were very much less intense in character. Twenty minutes following the injection the rectal instillation was administered. The patient became drowsy, asking questions in a whispering tone and receiving the answers and orders in a most thankful and obedient manner. She rested peacefully between the pains and tossed about during the pains, the character of which was not changed, neither in frequency nor in duration.

The patient rested for three hours, when she began to groan and became restless while the bulging at the perineum was observed. She was examined at 3 p. m., when the cervix was found to be fully dilated, the head rotated to anterior position and lying on the perineum, ready to be delivered. She walked over to the delivery room where she was prepared for the delivery. A light ether anesthesia was given. A perineotomy was performed and a piece of silk liga-

ture was removed. The baby was delivered with low forceps and the perineum sutured.

There was a slight delay in the respiration of the baby, although the heart and color of the baby were good. A whiff of carbon dioxide applied to the baby's mouth brought forth the normal cry. There were no complications in mother or baby. One hour later the patient received guests without showing any evidence of the usual postpartum exhaustion.

The physicians present at the hospital admired the tranquillity of the patient during the uterine contractions of the first stage of labor.

Case IV.—I wish to report this case for the purpose of bringing out the negative results, when the proper technic is not carried out. Mrs. L. S., nineteen years of age, born in this country, para one, the youngest of three sisters, has always been the pet of her mother, extremely temperamental and spoiled by parents as well as by her husband. She was admitted to the hospital with three fingers of cervical dilatation, membranes ruptured, head engaged in normal position, and was having pains every five minutes, lasting about fifteen seconds. She was given the two c. c. of fifty per cent. magnesium sulphate with one quarter grain of morphine, producing a mild degree of analgesia. This was followed, shortly after, by the administration of the rectal instillation, which began to take effect, when, contrary to orders, the patient's mother entered the room of the patient in labor and insisted upon conducting a regular conversation with her daughter and embracing and kissing her during every uterine contraction. This maternal sentimentality resulted in the patient's restlessness, becoming worse with subsequent uterine contractions and her actions became uncontrollable toward the end of the first stage. This case illustrates the importance of preserving the proper psychic atmosphere, when using this method for painless deliveries.

Case V.—Mrs. F. M., twenty-two years of age, native American, para one, intelligent but highly neurotic young woman, was examined at the hospital at 1 a. m. Her cervix was thick and long, cervical dilatation about three fingers, when examined during a uterine contraction; head presentation, which was slightly engaged in R. O. P. position. Membranes had ruptured fifteen hours prior to the examination, during which period patient claimed to have had very frequent and strong pains. She was very restless and exhausted. The uterine contractions were about every five minutes and lasted about fifteen seconds. She was despondent, apprehensive and hysterical.

After the regular preparations and assurance of elimination of her pains she was given the regular initial injection of two c. c. of magnesium sulphate with one quarter grain of morphine. This had a remarkable effect upon the patient. She quieted down considerably during the subsequent pains. Twenty minutes after the injection the rectal instillation was administered and the patient shortly after became drowsy, resting quietly between the pains and waking up several times during the height of the uterine contractions. One hour after the rectal instillation the patient received another injection, without morphine, due to restlessness she began to display. The frequency and duration of the uterine contractions were unaffected and the patient rested peacefully for a period of three hours, from the time of the first injection until she was delivered. At 3 a. m. the patient was examined and found ready to be delivered, with the head having spontaneously rotated to the anterior position. She was taken to the delivery room, where she was delivered spontaneously of a seven pound, healthy and normal baby, without any postpartum complications.

Prior to the delivery of the baby a prophylactic episiotomy was performed and the patient did not manifest any sensation of pain. The nurses present at the delivery were much surprised to see me introducing the needles and incising the tissues without hearing any expression of pain coming from the patient's mouth.

Case VI.—The following case illustrates the harmlessness of this method, if a repetition of the procedure should be required. Mrs. M. R., young American woman, twenty-six years of age, para one, highly sentimental and temperamental, of the theatrical type, was examined at the hospital at 11 p. m. and found the cervix thick, long and relatively rigid, with cervical dilatation of one finger and a half. The membranes were intact, pains irregular and not strong. There was head presentation in R. O. P. position, not firmly engaged. Owing to her temperamental condition she insisted upon stopping the pains and, against wishes, I was compelled to administer the treatment, although she was not ready for it. Following the injection of the magnesium sulphate with the morphine and afterwards the rectal instillation, in the routine manner, the patient fell asleep with the uterine contractions completely subsiding, for a period of five hours. She woke up after the five hours of rest and walked around till next afternoon with hardly any pain. At 3 p. m. she was examined and her cervix found to be soft, long and thick. The cervical dilatation was about three fingers, the membranes still intact and the head persisting in the R. O. P. position and more firmly engaged. She was having pains every five minutes, intense in character and about twelve to fifteen seconds in duration. At 3.30 p. m. the repetition of the whole procedure was started and it was completed at 4 p. m. The morphine was omitted. The patient rested quietly for two and a half hours, when bulging of the perineum was observed. When she was examined at 6.30 she was ready to be delivered. The head was found to have rotated to the anterior position. She was given a light ether anesthesia, a prophylactic episiotomy was done and the baby delivered with low instruments. There was no delay in the respiration of the baby, which cried immediately and there was no postpartem complications in the mother. This case shows that when this method is administered too prematurely labor may be delayed for several hours.

SUMMARY

The results obtained in cases selected at random were uniform and highly gratifying. This method was not intended for the purpose of producing an absolutely painless process of labor from the beginning to the end. Neither is it supposed to be a panacea for the relief of all sorts of pain that may incidentally occur during childbirth. When properly carried out this method eliminates the painful sensation associated with the uterine contractions of the greatest part of the first stage of labor and possesses

the following definite advantages: It usually shortens the course of parturition. It frequently corrects malpositions. The technic is comparatively simple and may be carried out at home or at the hospital. It is devoid of any danger either to mother or baby. There are no postpartum hemorrhages or any other complications. It affords the parturient patient a rest of several hours and thus conserves her strength and energy for the process of the second stage.

It is my firm conviction that with further development this method may become the long sought procedure for producing a painless labor in the real sense of the term, i. e., from the beginning of the first stage until the expulsion of the placenta.

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Midwifery in the Homes of the People*

ERNEST KAYE LE FLEMING, M.B. Cantab, M.R.C.S.
Dorset, England

To the general practitioner falls the lot of attending maternity cases in the homes of the people, and although many cases are attended by midwives only the general practitioner is sure to be called upon if the case presents difficulties.

Often, and in country districts especially, the conditions under which he has to perform his duty vary from the ideal, which are those which approximate to hospital or nursing home standard, to the other extreme. Every general practitioner of experience could give instances of attending cases of childbirth under conditions which make impossible any approach to ordinary cleanliness, still more to the standard of surgical cleanliness which he desires. The very difficulties, however, he so often encounters, the lack of assistance he can obtain and his wide experience singlehanded, tend to develop his skill, resource and independence, making him, what he so often is, a real specialist in midwifery.

From the general practitioner's point of view midwifery cases are the most trying of his many duties. Apart from the inconvenience of interruption of his routine work at a moment's notice for an indefinite time, coming in the midst or after heavy work and often breaking his night's rest, no case gives more anxiety and worry than a maternity case that develops complications during the puerperium. The sense of personal responsibility is indeed heavy, however much the conditions of labor which favor such complications were beyond his control, and however much the surroundings of the patient tend to retard recovery.

Of these puerperal fever stands conspicuous in the eyes of both doctor and public. Much has been written on the statistics of those cases, and it has been argued that the incidence of this complication should be an index to the advance in the standard of treatment of maternity cases, and that a decline in incidence should appear *pari passu* with increased care, attention and cleanliness in the conduct of labor. Further, that the absence of such decline indicates that the improvement in other aspects of public health is not shared in maternity cases as shown by the maternal death rate. This subject is too large to allow of more than brief reference here, but I should like to take this opportunity of expressing my own dissent from such conclusion.

Apart from the unreliability of figures taken from selected areas of an illdefined condition, the fact remains that a large number of these cases (twenty-five per cent. of published figures) arise when labor has been apparently normal and free from interference by nurse or doctor. Moreover, every doctor knows that cases, where many factors which favor sepsis are present, frequently run a normal course, and that septic symptoms sometimes develop when least expected. It would seem that we must look for some further unknown influence to explain such cases, possibly, for example, an unrecognized influence tending to diminish the normal personal resistance to infection.

This subject leads me to speak of one aspect of the conduct of labor which is of great interest to both public and doctors, namely, the use of instruments in uncomplicated labor. It is argued sometimes that since any interference with the course of labor adds to the risk of sepsis, instrumental aid to delivery should only be used when necessary for the safety of mother or child. In other words, instruments are sometimes used to save time or to satisfy the patient, and that such procedure is unjustifiable. I can only speak for myself in this respect, but I am confident that I have a large body of professional opinion behind me in the view I take on this question.

It is not uncommon for a prospective mother (especially in better class practice), before engaging her medical attendant, to enquire as to his views in this respect and to exact a pledge that she shall be saved unnecessary suffering.

Personally, under proper conditions, I do not hesitate to shorten labor and its attendant suffering in this way when it seems to me advisable, nor do I consider any extra risk is involved. Much depends on the temperament of the mother and her reaction to pain. On the whole the patient of today expects to suffer less pain than she did twenty years ago, and the modern mother expects more help in this respect than used to be the case.

Speaking generally after an experience of twenty-five years in town and country practice, I am convinced that there has been the same steady advance in the treatment of maternity cases as there has been

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in medicine and surgery generally, and in the public health.

The quickening of means of communication by telephone and motor car brings the doctor, especially in rural districts, nearer to his patient, and renders further assistance more easily obtained. The general standard of cleanliness in the home has advanced and with it facilities for obtaining the necessary supply of clean water, linen, etc. The handy woman is steadily being replaced by the trained midwife. Nursing associations are springing up everywhere. A complicated case is recognized earlier and more easily dealt with. Hospital accommodation for special cases is increasing with the necessary transport arrangements.

It is along these lines that we must look for continued improvement. We need a larger supply of properly trained midwives who can deal with uncomplicated cases and recognize abnormal cases early, and who can educate young mothers along right lines. Antenatal and postnatal clinics must be increased, the former especially to sift out cases of possible pelvic malformation and independent disease with a view to hospital accommodation and treatment.

Facilities of this kind will not only benefit the cases themselves, but will ease the burden of general practitioners in dealing with a branch of his work which in proportion to the skill, time, labor and anxiety expended, bring him a financial return that can only be termed nominal.

Publicity Methods in Maternity and Child Welfare*

LORD RIDDELL
London

Publicity regarding maternity and child welfare work must be popular, attractive and accurate. Highbrow articles are useless for popular purposes and inaccurate material is a positive danger. These may seem truisms. Experts are likely to forget that even the terms they use so glibly are often not understood by ordinary people. "Antenatal," "postnatal" and "neonatal" are good instances. How few people understand the meanings of these phrases! Most writers on health subjects assume that their readers know much more than they do. It is also essential to remember the importance of selecting the right media. When advertisers are about to engage in a campaign, they select publications best calculated to reach the class to which they desire to appeal. Indeed, the selection of media is an art in itself. What applies to advertising applies to health propaganda. We are all prone to attach too much importance to publications which we read and which appeal to us. Although not so spectacular, a suitably written article in what may be regarded as a common publication, read exclusively by women, may be far more effective for this particular propaganda than one in what may be described as a highclass daily newspaper. Unfortunately, most writers like to see their productions in publications that appeal to them rather than those which appeal to the class they wish to reach, when that class does not happen to be of the superior variety. A certain measure of dignity must be preserved, but in making a popular appeal regard should be had to the human touch. A short time ago I equipped a maternity centre in north London. The premises had been used as a public house. I suggested that the centre should be called "The Mother's Arms," but my suggestion was negatived as being too frivolous. Perhaps my critics were right, but as a publicity man I am sure that if the title had been adopted the new clinic would have been a landmark in north London. The work itself, however, is the best advertisement, and we may well be proud of what has been accomplished by the various agencies engaged in dealing with maternity child welfare, and the health of the child at school. It is, however, unfortunate that so little information is supplied to the public as to what is being done by these various agencies. How little the public know about the examination of school children, how the work is done, by whom it is done, and what steps are taken to remedy defects discovered! The same applies to the various clinics, scattered throughout the country. Few people know by whom they have been established, how they are paid for, how they are officered, and how their functions are limited. The public are also profoundly ignorant of the details regarding the midwifery service.

Little is known either about antenatal work. Perhaps from motives of delicacy the subject has received practically no publicity. The importance of improved midwifery and antenatal methods is not realized. Few people understand that this is one of the most important branches of medicine and preventive medicine. It is not understood that there are always approximately three quarters of a million expectant mothers, and that three babies are born every two minutes. Until it is too late most women do not appreciate that their whole lives may be embittered by the results of unskilful treatment or foolishness on their own part. The time has come when this subject should be discussed more freely. The expectant mother and childbirth are usually spoken of as if the subject were taboo. Instead of saying a woman is pregnant, we say she "is in a certain condition." Why should we not be natural in dealing with such matters?

To return to our publicity activities, much would be done if the various authorities engaged in this work were to take steps to acquaint the public with what they are doing. The work goes on from day to day, and most effective it is. But very little is said about it. Good copy is available, and if the authorities were to take suitable steps the newspapers, and in particular local newspapers, would be only too glad to avail themselves of it.

*Address delivered before the Fourth English Speaking Conference on Maternity and Child Welfare, London, July 5, 1926.

Historical Medicine

The Legacy of Greece to Galen

IV. The Failure of Nerve

JONATHAN WRIGHT, M.D.
Pleasantville, N. Y.

In notes upon the religion of science I have made of my amateur browsings on the wisdom of Plato and Aristotle I discover I have been thinking of it from a purely materialistic viewpoint without any reference at all to the flocks of gods which hovered over them or demons which bothered Thales before them and even Aristotle to such a degree they had to make place for them. I have clung to the manifestations of the science of religion which is to be thought of in the contact of the finite with the infinite, of materialism with mysticism, of matter merging into spirit —or into energy if you choose and we must be materialistic still. On such borderlines of advanced thought we breathe an atmosphere of adventure and firmness of nerve which invigorates us in a study of Plato and Aristotle. If after getting accustomed to the altitude and breathing freely the reader of science will turn to the philosophical works of Cicero, the *De Natura Deorum,* the *De Finibus,* the *Tusculan Disputations,* etc., he will take note of the change of what in some previous essay I have called the fibre of thought. When I used this term, I remember I hardly knew exactly how to define it or, very likely, exactly what I meant myself, but in reading Gilbert Murray's *Five Stages of Greek Religion,* which in a new edition he has made out of four, I find the strange chapter label, *The Failure of Nerve,* very suggestive. He says he knows no better way of defining that change in religious feeling and theory which ensued on the death of Aristotle. I am sure this observation of the great classicist must be kin to the alteration in the fibre of thought to which I have alluded, but of course he gives to the religious aspect of it a masterly and extended analysis which is beyond my powers and allotted space for the exposition of it in the history of medical science here.

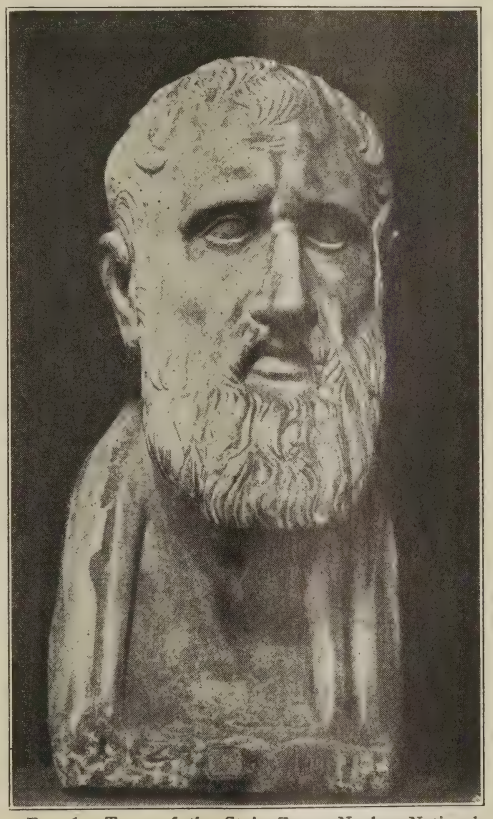

FIG. 1.—Term of the Stoic Zeno. Naples, National Museum. (*After Hekler.*)

Now as we meet with Zeno and Epicurus and Chrysippus, Panaetius and Poseidonius in the pages of Galen we perceive, even forgetting what I have recalled of Cicero and former impressions, that there is a change from the atmosphere of the *Timaeus* and the *de Anima* and the *Metaphysics,* but we naturally ascribe it to Galen's presentation. Galen had no philosophic breadth. He may have been a large fish in shallow waters, but he was no leviathan of the deep.

Yet it is to Galen and his like that we are indebted for the fragments preserved of the philosophers of what we are forced to call the decadence of Greece and involuntarily we say to ourselves, here is the reason. There may have been no sudden change and if we had had their works themselves it might not have been perceptible. Their works perished and Plato's lived. We have the thought of one direct and the others at second hand. This is plausible enough, but if we turn again to Cicero, whose words we have direct, we at least take note that by that time the change is marked indeed. If any one is supreme in the exposition of thought, his own or that of anybody which is not beyond his sphere, if there is any one excels his fellow man in making you forget black is not white, in piling up all the wickedness on one side and all the virtue on the other, he it is. As you read him direct from the standpoint of scientific thought and mindful of that of his own age, you perceive the decadence in the fibre of it—to which I have digressed further than I had intended in beginning a further consideration of how Galen utilized it in his age, decidedly more decadent in intellectual vigor than that of Cicero.

Galen broaches a question (1a) in connection with the circulation of the blood which may well arrest our flagging interest, since he brings into view a very puzzling problem, indeed still a very fundamental consideration in biology. He argues there must be something in common in the nutrition of all parts of an animal, however different in structure those parts may be from one another, which seems true enough. A nerve runs from the base of the skull to the heel, in a sheath no doubt, but nevertheless it or its sheath partakes of a nutrition identical with that through which they have passed. The functions of its branches differ. It is unnecessary to depart from the Galenic conception in details as to this phenomenon.

The modern facts in no way alter the problem of specific adaptation. It was natural for Galen in the light of Aristotle's *Entelecheia* to manufacture a specific one for each locality, but that complicates matters so enormously we are perforce compelled to be satisfied with entelechy in a lump for the whole. It is still simpler to spread it as a veil over all creation. As you pass in your automobile you note the maple tree you saw standing in the beauty of its symmetry a year ago has been riven by a thunder bolt—a section cut out of it, a third of it gone. You feel a pang and pass on. A few years later as you pass you note all its symmetry restored. You can scarcely notice a notch in the outline of the green foliage against the sky. If you are a philosopher of the modern stripe you say the extra nutrition has been diverted to channels necessary to secure again that beautiful symmetry which best adapted it, standing alone and bared to the storms of heaven, to bear the strain and survive. You can say the same thing about the bit of skin you plant or turn inward in a plastic operation on a mucous membrane. Nature might have got along and filled in the gap herself, but she magnanimously accepts your officiousness. You get your bill and a meed of soul comforting praise out of it, but it you stop to think, you are lost. As it is you are more than satisfied, the patient is satisfied and so is everybody else, except Aristotle and Plato. Galen is satisfied that there is a specific power that nourishes the nerve. Plato says it is Necessity and Aristotle says it is *Entelecheia.* You can see these early men say this tentatively, but Galen is satisfied. It is the function makes the part and he writes a famous book on the *Utility of the Parts,* declaring he is moved to choose the title following Aristotle *On the Parts of Animals* but you will take note that Aristotle doesn't give prominence to the Entelechy or the Necessity in his title. That's the difference between Galen and Aristotle and it is a very large one. In a double sense there is a failure about that nerve of Galen's which no one has remedied since. The modern commentator is willing to let Aristotle name it, or the vitalist or the fundamentalist. If he has any preference it is for the modern philosopher who calls it *Evolution or Heredity* even. They can all go back to Aristotle's *Unmoved Mover* and it will not trouble the modern agnostic any more though it becomes even more vague, but we must have names.

Vague as they are, many of them have underlying shades of difference in meaning vastly helpful in analysis. Evolution has given a new meaning to teleology, though the increasing tendency in philosophy to give it a connotation simply with change has largely emasculated it. Aristotle, followed by Galen who carried it much further, built on the basis of Nature doing nothing in vain and that sort of thinking quite aside from the kernel of truth in it has a paralyzing effect on thought and it had its share in paralyzing the legacy of Greece after Galen, but he had the thought as a part of the legacy. Yet for a time it was of great help to anatomy. That function explains and marks out the limit of structure is still a working hypothesis. It was by this means largely that Galen followed the origin, course and distribution of the spinal nerves. It was somewhat due to this he was able to distinguish the sheath of the nerve from its neural contents and prove that the leptomeninges gave origin to the one and the cerebral substance to the other. It helped him and perhaps Herophilus before him to prove the sheaths of the arteries were not at their terminations continued as nerves. Aristotle entertained this idea so far as he seems to have had any conceptions of the nerves. Galen knew, too, but probably from observation, of the central canal in the nerves. Erasistratus at first thought the nerve substance came from the meninges, too (1b), but later with more experience in dissection he also recognized the cerebral origin of the nerves. There were those, as has been noted, who believed the meninges were continued as a fibrous sheet to the membranes of the heart.

While there is no direct acknowledgment of Galen's having dissected the human body, there are intimations of it aside from the dubious references to the body of a robber and bodies of enemies in war. There is no probability at all that he did not dissect the human body at Alexandria, though some of his mistakes in anatomy have been traced to his study of it in apes. He was there in the second century A.D. and he cites from the account of Erasistratus writing in the third century B.C. that the human brain is bilobed in the same way as in animals, so of the ventricles and cerebellum and the convolutions in man, as by far the most intelligent, are the most marked. At any rate it is evident that if Galen himself never dissected man a part of the legacy of anatomy from Greece was derived from the dissection of the human cadaver by a Greek at Alexandria four hundred years before him. If one likes any one can believe there was no dissection of man's body before the Italian anatomists. In Greece it probably was against the law or so dreadful a law was not thought necessary, at any rate it was hidden from the people, but so was body snatching in many states in this country well within the memory of comparatively young medical men. So far as I have observed it is still not one of the features of the Sunday papers to tell the people how and where bodies are procured for dissection. They were probably vastly more chary about its not getting on the first sheet in the Alexandria daily news. Galen disputed the authority of Aristotle who lived four hundred years before him at least and whom he knew as the man best acquainted with the anatomy of apes and deer and hares, but not sufficiently acquainted with that of man. Galen therefore did not feel abashed to point out that Aristotle did not know that man had a deeper furrowed and a more convoluted brain than an ape. How did Galen know?

It was modest in him to say so little against and to say so much for Plato's tripartite soul, but he did not spare Chrysippus for advancing as anatomical proof the story of Athena, the goddess of wisdom, springing from the head of Zeus or of the vulture tearing at the liver of the Titan because of his lust for Hera. Galen, however, missed the historical interest there is in tracing the primitive thought of man through the mind of the greatest thinker of Greece and of his degenerate followers to the well springs of his own thought. These guided Galen and those before him to a correct understanding of the anatomy and physiology of the brain. He was the first great man of experimental research, but folk lore as well

as teleological theory were his guides. The Physician of Cos did not let his theories or idle talk interfere with his common sense and Galen sometimes did. He believed spitting on the head of a scorpion killed it (1c), nay he said he had spit on the head of one himself and killed it. There may be some connoisseurs of slang will think that such lying gives no indication of a failure of nerve, but I claim it shows a decline in the strength of the fibre of thought to go such lengths as Galen did with his teleology and his humoral doctrines. In medicine he was an example of the same perversion of thought of Aristotle as he charges on Chrysippus and Epicurus and the later Stoics. He had not heired enough of the *Sophrosyne* of Greece in his legacy to protect him from extravagances of thought and intemperance of language which Hippocrates evaded. He heired the teleology of Aristotle and the mythology of Plato, but he carried them to excess. It is difficult for modern materialism to understand how men who had so largely abandoned the anthropomorphic idea of God could have gone so far in teleology as Aristotle and Galen. That seems only possible in those who attribute anthropoid tastes and opinions as to what is good and bad in their own conceptions to an allwise Creator and an allprovident Nature.

False as we are disposed to regard it, whether we are modern mystics or materialists, it is erroneous to think this sort of teleology played no beneficial rôle in the achievements of human thought. There is a certain blindness in men which hides the fact from them that the progress of the world has usually been guided by imperfect theory and absurd beliefs. Even the Unmoved Mover of Aristotle we find acting on Aristotle's idea of what is best, but Galen makes the Almighty play some sorry tricks in his philosophy and a good many of them. We are tempted at every turn in his *Utility of the Parts* to abandon physiology for teleology. Indeed physiology was Galen's theology. The works of Nature were the works of God in detail as well as in the plan for the whole and he knew a hundred times more about the latter in the systemic phenomena of animals, or at least of man, than either Plato or Aristotle. The latter had God give a deer huge antlers for defence and swiftness of foot, too, but we are tripped up by a commentator who has the curiosity to know how it was arranged that the heavy horns did not handicap the deer in the use of his swiftness of flight. This is an exceptional slip for Aristotle, but the teleology of Galen is frequently in trouble. Modern physiology is still occasionally absorbed in the *why* rather than the *how* of physiology in discoursing on the functions of the anatomy of life, so perhaps it is not well to cast too many stones or too often at Galen. It is singular, though, as I have before remarked, that of the philosophers it is Plato comes in for most of his praise and not Aristotle. He is the philosopher as well as the biologist and, of all things, the man who taught him that "Nature does nothing in vain," whom the author of the *Utility of the Parts,* takes most to task.

"What could Aristotle have meant by saying the heart is full of nerves? For he is no fake philosopher nor of all things so unskilled in dissection that anyone should think he would slip, like the disciples of Chrysippus, into false ways" (1d). He intimates that students are misled by the careless way Aristotle has written about many matters, because they do not wait for dissections to clear away the difficulties. He accuses Aristotle of careless writing, which anyone reading him may well believe is justified. Aristotle does very frequently, I think his editors agree, slip into ambiguity and inconsistency on account of it, but if the reader, too, gets careless because his mind wanders on account of it, he is apt to miss something new. That danger is not so pressing with Galen. As for the latter's charge, like most progressive men Aristotle is inconsistent at times and often contradicts himself. It is only stagnant men that are not, only narrow men who seek to avoid it.

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Toothache Three and a Half Centuries Ago*

THE HONORABLE WILLIAM RENWICK RIDDELL, LL.D., F.R.H.S., &c.
Toronto

(*Concluded from page* 361)

Now, however, we should write on foramina in the teeth or those which are livid when this is caused by influx.

"If the malady does not yield to treatment and the pain continues, the tooth is to be extracted particularly, if it is livid or perforated or loose—either with the instrument or by medicament. A corroded tooth should also be extracted. If, however, it is not corroded or moveable, but is still painful, it should be dried up by actual cautery. These directions are gathered from Galen, Paulus (Aegineta), Aetius and others; but the following treatment is that of the more modern practitioners.

"If the pain arises from humors, mixed with blood, the bile if present, being first purged, the mouth is washed with vinegar in which have been decocted myrtle leaves or oak galls. In the case of extreme pain keeping the patient awake, a dram of theriaca or philonium dissolved in white wine is to be held in the mouth toward the affected part or the vapor from hyoscyamus seed in hot vinegar taken into the

*Written for the Academy of Dentistry of Toronto.

mouth by a funnel. Plasters made of pitch alone or of a mixture of mastich and gum Arabic are to be applied to the side affected . . . thus the flow of the humors is checked.

"After the body including the head is purged where the cause is frigid, pyrethrum is to be chewed, this draws away the pain. . . . Calefacients are to be injected into the ear on the side affected, such as the juice of onions, rue, or matricaria, or some calefacient oil such as oil of almonds, sweet root, lilies, sambucus, in which intestinal worms have been decocted, or of laurel or costus. Fumigation of any hot substance taken through a funnel allays the pain as for example from a decoction of satureia. If there are worms present, something bitter should be added so as to kill them and the teeth should be rubbed with theriaca."

It is seldom that teeth ache unless they are corroded and the corrosion penetrates to the internal cavity, and touches the nerve—and consequently it follows that the maxillaries ache most of all.

In these the cavity is to be filled with aqua fortis. The hollow of the tooth may be filled with mastich chewed and made soft rather than with wax. Afterwards desiccants are to be used lest the applications which clean the teeth should erode them by their acrimony. If there be fetor, musk is to be added, if putrefection, myrrh—at all events if these patients are subject to headache or vertigo because they are injured by the odors. The external parts of the face are to be anointed with anise oil. It is well, too, to draw the humors outward so as to have no repletion. When they go outward, the toothache ceases for a time, the face being inflamed.

The body being purged by pills, we wash the teeth with the sharpest vinegar in which cypress fruit and alum have been decocted. The best prescription is as follows: Take of pepper and pyrethrum each half a dram, of theriaca two drams, mix in the form of small pastilles, one of which apply to the aching tooth.

Hot linen is to be applied frequently to the aching jaw or little sacks of the leaves of amaracum, betonica, or cypress which are applied hot after being sprinkled with white wine. Brandy may be held in the mouth or applied with cotton to the part affected. Oil extracted by distillation from caryophylli is useful —they call it Quintessence—so too the chemical oil of sage or rosemary.

When the gums are swollen, a plump fig split may be usefully exhibited.

In the warmer fluxion, trochees may be prepared from the seed of hyoscyamus, milk, mastich, crocus, in conserve of roses which may be applied to the part affected. Some even add opium in excessive pain. Anodyne cataplasms are used in great pain, made of bread crumbs with oil of roses, etc., or of the pulp of plums cooked under ashes and mixed with a little water to which may be added mucilage of the seed or root of althaea.

If there is caries of the tooth, the blackened and eroded part must be shaved away lest the sound part and the adjoining teeth be infected.

Insensitiveness (stupor) of the teeth is cured by portulacca or oil from immature olives or amurca cooked in a brazen vessel until it has the consistence of honey and used as a unguent.

GLOSSARY

Aizoon minus is the stonecrop, *Sedum album* (the Aizoon majus was houseleek, *Sempervivens Tectorum:* the stonecrop was also called *Sempervivens minor).*

Alica, properly speaking, is spelt, *Triticum spelta:* but as the grain was often used to make tisanes, the word was extended to the tisane itself. It is so employed by Celsus, Pliny and Martial. The epigrammatist says: *Nos alicam, mulsim poterit tibi mittere dives; Si tibi nuluerit mittere dives, eme.* Epig. xiii, 6. We send you barley water, a rich man may send you hydromel: if the rich man don't want to send it to you, buy it yourself.

Altercum, hyoscyamus. Pliny, *Nat. Hist.* 25, 4, 17, says that altercum is the Arabic name for what the Greeks call hyoscyamus (hogbean)—in Latin *Suis faba* or *Faba porcina.*

Althaea, marshmallow: *Althaea officinalis.*

Amaracum, marjoram: *Origanum majoram.*

Amurca, the watery part which flows out in pressing olives, the scum or dregs of oil.

Amylum, starch. Pliny, *Nat. Hist.,* 18, 7, 17, says that is made from all kinds of *triticum* and *siligo* (spring and fall wheat); the best from *Triticum trimestre,* a wheat that ripens in three months.

Asses' milk, lac asininum, used in pulmonary affections.

Astringentia, astringents, medicines which were believed to constringe the organic textures of membranes—such as mint, millefoil, certain nuts and berries. External astringents were often called styptics.

Balaustia, flowers of the pomegranate, *Punica Granatum,* especially of the greater Wild pomegranate, *Malus Punica sylvestris major* were used largely in diarrheas, &c.

Betonica, wood betony, *Betonica officinalis,* of old a great "dryer," vulnerary, diuretic, cephalic and ecbolic—it is, however, in fact, almost inert.

Calamintha, calamint or calaminth, of old a diuretic, emmenagogue, ecbolic, alexipharmic—a whole genus of the *Labiatæ,* now generally called *Clinopodium,* basil.

Calefacients, heating medicines, like mustard and pepper.

Capparis, Capers, prickly caper bush: *Capparis spinosa*—the buds are the well known condiment—the bark, "cortex," was also used as an astringent, diuretic and alterative.

Caryophillus, cloves.

Castoreum, castor, from the beaver, an antispasmodic, nervine, sedative.

Chemical medicines were those obtained by chemical means, fire, &c., on the system of Paracelsus, as distinguished from Galenical medicines, generally "simples."

Conserva rosarum generally of red May and June roses. This conserve was in high repute for pulmonary troubles, especially hemoptysis.

Cornu cervium, deer's horn, shavings boiled in water or wine were considered emollient and nutritious.

Costus applied to several plants oriental and aromatic—chiefly the *Costus aromaticus* (or *Arabicus*), tonic, diuretic, carminative, emmenagogue, &c.

Crocus, saffron, stimulant, diaphoretic, emmenagogue.

Cypressus the ordinary cypress. *Cypressus sempervirens,* berries, leaves and wood are all astringent.

Cypress fruit, berries of cypress.

Cytinus sometimes the calyx of the pomegranate blossom (*Balaustion*): sometimes the *Asarum hypocistis.*

Diamoron, a syrup prepared from honey and mulberries, (Mori) used generally as a gargle: sometimes blackberries were substituted for mulberries.

Dictmnus, fraxinella or origanum, a nervine, anthelmintic and emmenagogue. The species generally employed was *Origanum Dictamnus.* Dittany of Crete—almost inert. Pliny, *Nat. Hist.,* 8, 27, 41, tells an extraordinary story of this plant *"Dictamnum herbam* extrahendis sagittis cervi monstravere, percusi eo telo, pastuque ejus herbae, ejecto." The deers showed the plant dictamnus efficacious for extracting arrows, struck by a missile it was ejected when they ate of this herb. Aristotle says wild goats do this, not deers.

Discutients, medicines reducing humors or all swellings—the word was sometimes applied to carminatives.

Foenugraecum, fenugreek, *Trigonella fœnum.*

Galla, oak galls.

Halicacabus, a kind of bladderwort, *Vesicaria* or *Physalis,* called also Morion, Moly, &c., Pliny, *Nat. Hist.,* 21, 31, 105, says it produces death more quickly than opium, but *"præsentaneum remedium ad dentium mobiles firmandos si colluerentur halicacabo in vino."* a rapid remedy for making loose teeth firm if they are washed by halicacabus in wine. He also

says that skilled soothsayers drink an infusion of the root. Its only known quality is diuretic.

Humor: The physiology and medicine generally of the Middle Ages cannot be understood without the theory of humors. There were supposed to be four humors or fluids of the body—sanguis (blood), chole (bile or yellow bile), phelgma (rheuma or pituita) and a mythical melancholy (black bile). On the proper mixture of these health depended: if any were in excess "distemper" "intemperis" followed—"temperies," temper, really means a due mixture of humors, blood and yellow bile being hot, the others cold.

While most physicians until almost modern times considered that there were four temperamenta, i. e., four forms of undue mixture of humors by an excess of either sanguis, phlegma (rheuma, pituita), bilis (chole) or melancholia, giving to the subject the sanguine, phlegmatic, bilious or melancholic temperament, respectively, there were many whose opinions varied from those of the majority.

For example, the celebrated Dr. Archibald Pitcairne, the teacher of Mead and Boerhaave, in his Latin work *Elementa Medicinae Physico-Mathematica* . . . London, 1717, does not admit of a sanguine temperament at all. In his *Propositiones* as well in the body of the work he makes the Temperamenta three in number. I translate extracts from the *Propositiones:*

"LXV. There are three general temperaments.

YXVI. That fluxility of the blood which (given the impetus of circulation) permits that the Bile is secreted in greater proportion to the other secretions than is usual in most of the inhabitants of the same region exhibits itself in the bilious temperament.

LXVII. That fluxility of the blood which (the spleen being properly constituted) permits that the proportion of the secretions by the kidneys and sudoriferous vascula to the other secretions is too great exhibits itself in the melancholic temperament.

LXVIII. The Pituitous Temperament is where by reason of the force given to the blood by the heart the proportion of saliva to the other secretions is too great."

He adds that anyone who has any of the Temperaments has disease nascent in him.

In the Text, Lib. I, cap. III, sec. 6, he says that it is an error to make four temperaments and that what is called the sanguineous temperament is in reality *plethora;* that temperament comes from the fluxilitas, not the quantity of blood.

Hyssop, *Hyssopus officinalis,* an aromatic stimulant used in an infusion.

Licorice glycyrrhiza, sweet root, *radix dulcis.*

Malicorium, pomegranate rind.

Maticaria, feverfew, pythenium, tonic, stomachic, emmenagogue, anthelmintic, diuretic, &c.

Melilotus, *Trifolium melilotus,* melilot, a kind of clover.

Myrrha troglodytica, myrrh, supposed to come from the land, of the troglodytes who lived in caves—probably from Arabia Felix. But see Pliny, *Nat. Hist.,* 6, 29, 33, 34.

Nymphaea, the common white Pond Lily, *Nymphaea odorata* and *Nymphaea tuberosa.*

Oleum anethinum, oil of dill or anise.

Oleum chamaemelinum, oil of camomile.

Oleum irinum, oil of violets (chiefly the Florentine violet).

Oleum myrteum, oil of myrtle.

Oleum rosaceum, oil of roses.

Oleum rutaceum, oil of rue.

Olivæ omphaticides, olives falling before they are ripe.

Origanum, wild marjoram, has a pungent oil exhibited in toothache. Dr. John Quincy in his *Complete English Dispensatory,* London, 1749, at p. (157) says: "It is a mighty thing with some people for the toothache; they holding it upon some lint or cloth in the mouth as near the part in pain as they can."

Papaver, pepper.

Pentaphyllum, cinquefoil, *Potentilla reptans.*

Perdicium, pellitory, *Xanthoxylum fraxineum,* Pliny, *Nat. Hist.* 22, 17, 19, calls it also parthenium helxine, and sideritis, and says that it has the name, perdicium, because the partridges (pedices) like to eat it—he advised it for gout.

Petroselinum, *Apium petroselinum,* rock parsley.

Philonium or philonanum antidotum, a celebrated eye salve invented by Philo.

Piceae, the different kinds of pitch.

Pimpinella of many kinds, here the *Sanguisorba* which, says Quinsy, *op. cit.,* p. 87, "takes freckles off the face, eases the toothache and ripens swellings. But notwithstanding these wondrous virtues . . . it is now (1749) almost out of practice and is in no great esteem." *Sic transit gloria.*

Polium, poley, Germander, *Teucrium polium,* a strong smelling plant. Pliny, *Nat. Hist.,* 21, 7, 21, says that some call it Teuthrion, that Musaeus and Hesiod praise it extravagantly as good for everything (ad omnia utilem) and the common (but baseless) idea was that its leaves were white in the morning, purple at noon and blue at sunset.

Portulaca, purslane, antiseptic and aperient; According to Quincy, *op. cit.,* p. 198, "a great assuager of choleric heat" and good for the scurvy.

Posca, a drink of mingled vinegar and water; oxycrate.

Ptisanes, tisanes, aqueous medicines like barley water.

Pulegium, *Mentha pulegium,* pennyroyal, fleawort, aperitive discutient, carminative, emmenagogue, ecbolic, etc.

Repellents, medicines for reducing a humor, &c., by driving out the fluid. See Quincy, *op. cit.,* pp. 201, 202.

Repressives medicines to prevent or cure a tumor, &c.

Rubus, berries of the raspberry kind.

Rumex, a dock or sorrel, R. sylvaticus, woodsorrel.

Rumex, a dock or sorrel, R. sylvaticus, woodsorrel.

Ruta, rue. Salvia, sage. Sambucus, elder.

Sapa, a rob of grape must or new wine boiled thicker when not so thick, it was called defrutum.

Satureia, summer savory, *Satureia sativa.*

Senecta, the slough or castoff skin of a snake.

Sweetroot, licorice.

Taeda, tar of various kinds.

Theriaca, a medicine of many ingredients good for everything, preventing and curing—a mithridate.

Veratrum *album,* white hellebore.

Veratrum *niger,* black hellebore.

Vermes terreni, earthworms as distinguished from lumbrici, intestinal medicine. Viola, violet, pansy or flag.

GENERAL NOTE

It may be of interest to add here some medicines approved by another physician—not of so much note, indeed, as Piso or Boerhaave, but still of considerable fame in England in his time. Thomas Fuller, M.D., Cantab. (for whose other book, see Bass' *History of Medicine, Am.* ed., p. 805, n. 1) published his *Pharmacopeia Extemporanea or a Body of Medicines* . . . first, in Latin (five English and two Dutch editions) and then in English—the second edition in English published at London, 1714, is much the best and is that I quote from.

For odontalgia he has many medicines—Electuarium Apophlegmaticum, Epithem Aluminous, Errhines of various kinds, Gargle of Pellitory and other Gargles, Masticatories, Pellets, Epispastic Plaister, and several other Plaisters, Dentalgic Powder, Odontalgic Tincture, &c.

It will be sufficient to give the prescription for a few:

"Aluminous Epithem—Take burnt Allum Powder'd half an Ounce, Nutmeg 1 Dram; Honey of Roses, as much as sufficient to make it of the Consistence of an Ointment, which spread upon Paper, and bind upon that side of the Face that is in Pain, with a convenient Cloth.

"The Toothache is entitled to it, and it hath place when the Cause is not a hollow, rotten Tooth but a sharp Rheum affecting the whole jaw, and one Side of the Face, which bringeth a conflux of Humours and an Inflammation For: it repells very powerfully."

If the pain came from a hollow tooth, he recommends:

"Pellets for the Teeth, Take Asa Foetida, 8 Grams, Camphire, Dragon's Blood, each 1 Grain, Oil of Pepper, 2 Drops, mix. It's to stop a hollow Tooth: "Twill oftentimes ease the most Sharp Pains and prevent their Return."

We end with: "Odontalgic Tincture: Take Roots of Pellitory of Spain half an Ounce; Tobacco cut and dried, Balaustines, of each 1 Dram; Cloves a Dram and a half; black Pepper 1 scruple; Camphire half a Scruple; Hungary Water 8 Ounces; sharp Vinegar 2 Ounces; extract a Tincture; to which (when filtred) add Liquid Laudanum (not tartariz'd) 2 Drams. It may be used with a Decoction of Savine. Let Patient be careful not to swallow it down."

In a small quarto published in London in 1627: *A Thousand Notable Things of Sundrie Sorts,* are to be found very many receipts and nostrums. The author, Thomas Lupton, tells us how to stop an "aking tooth"—he recommends "a certaine woorme with many feet (of some called a swyne louse) to be pricked with a needle and the tooth touched with the same needle; the payne thereof will cease immediately. This I got hardly out of an old booke."

Editorial Articles

HUMAN TYPES

R. B. Bean, of the School of Anatomy, University of Virginia, has made a study of human anatomical types, measuring some thirty thousand American whites and negroes, Filipinos, Japanese, Chinese, Spaniards, and others. He concludes that there are three morphological types which he terms hypermorph, mesomorph, and hypomorph. White persons are only of the first two types. The hypermorphs are tall but with low sitting height, long and narrow arms and legs, slender body, narrow nose, shoulders, thorax and hips. The mesomorphs are of medium stature, broader and bulkier in special features. The descriptions fit only typical subjects, there being various "blends, mixtures, and mosaics."

Bean points out that there is nothing new in this classification and that for mesomorphic other names have been used, as broadback, transverse, lateral, herbivorous, digestive pykniker, muscular, apoplectic, plethoric, phlegmatic, lymphatic: and for hypermorph—narrow back, linear, leptoprosonic, carniverous, sanguine, respiratory, cerebral, nervous, phthisic, cachectic, choleric. Bean thinks that the classification into sanguine, choleric, phlegmatic, and melancholic, attributed to the Greeks, may have been based on four types existant at that time, the sanguine (hypermorph) and phlegmatic (mesomorph) alone surviving in northern climes.

These two types have, of course, been accounted for by endocrine methods. More mesomorphs are found inland and, hence, deficiency of iodine must, or at least may (according to Stockard), be the cause. A more plausible explanation, however, is that of differing food habits.

Draper has recently classified gallbladder, ulcer, pernicious anemia, and tuberculous patients by anthropometric characters, and found the gallbladder and anemia patients were largely of the mesomorph or broad, stocky, type, while the tuberculous and those possessing gastric ulcers were of the hypermorph or slender type. One must wonder as to the relation in these types of cause to effect, of disease to structure, as well as of structure to disease. Certainly one type often changes, at least in part, from one to the other, the slender consumptive of the early twenties becoming the apoplectic person of the fifties or sixties. We can, of course, invoke the aid of endocrine philosophy again, and this has been done to account for the thin, wiry youth, Napoleon Bonaparte, becoming the phlegmatic and obese gentleman of middle age—Emperor Napoleon.

Bean concludes: "From previous studies it was shown that the epitheliopath represents the abnormal hypermorph and is susceptible to disease of the structures derived from the embryonic ectoderm and entoderm, such as the skin, nervous system, and alimentary canal. They are also susceptible to chronic diseases such as tuberculosis of the lungs, cancer, pellagra, leprosy and other diseases of malnutrition. The mesodermopath represents the abnormal mesomorph and is susceptible to diseases of the tissues derived from embryonic mesoderm, such as heart and kidneys, arteries and veins, joints and muscles. They are susceptible to such acute diseases as pneumonia and typhoid fever. There is a question as to whether there are functional epitheliopaths and mesodermopaths or not. There may be changes in the soft tissues during the life of a person so that the diathesis may become, for instance, either plethoric or phthisic. The plethoric may resemble the mesomorph; and the phthisic, the hypermorph." All of which generalizations may contain a grain of truth of some small value to the clinician.

THE IMPORTANCE OF MIDWIFERY

Nowadays, midwifery is looked upon as a much more serious medical or rather surgical event than was formerly the case. It used to be regarded as quite an ordinary domestic occurrence, attended with very few risks, as, in fact, it seems to be at the present time among hardy primitive people. But civilization has altered conditions and changed our conceptions as to the delivery of a woman, or, at least our views on the question have changed more or less recently. Perhaps a somewhat exaggerated view of the risks of midwifery are held by some authorities who think that the management of a confinement is a serious surgical operation which should seldom if ever be allowed to take place in the home. Dr. T. Watts Eden, consulting obstetrical physician, Charing Cross Hospital, in a paper read before the Fourth English-Speaking Conference on Maternity and Child Welfare held in London on July 7, 1926, in reviewing the subject from the consultant's attitude pointed out that the truth lies somewhere between the extreme views that prevail on any subject, and he endeavored in his paper to state where in his opinion the truth did lie.

From the point of view then of the doctor and nurse the conduct of labor was a surgical procedure which might be of the simplest surgical character or it might be attended with developments which at once

transformed it into a major surgical operation. As a rule the possibility of such developments could be foretold during pregnancy, and measures taken either to avert them or to deal with them adequately if they proved unavoidable. This was not true, however, of all the obstetrical complications; there were some which appeared like a bolt from the blue without any previous warning. This element of uncertainty was obviously not without a bearing upon the question of midwifery in the home. It followed that there were certain surgical requirements which must be regarded as the minimum of safety if a woman was to be confined at home. The first was that she should have a room to herself. If the house did not allow of the provision of a room apart that home was unsuitable for confinement and the patient should go to a hospital given adequate and proper simple home conditions and surgical requirements.

Dr. Watts Eden was of the opinion that a woman might safely have her baby at home. That it was safe had been shown by the statistics of the outdoor services of British hospitals, which showed, speaking generally, a child birth mortality rate which was well below the average for the whole country. The incidence of puerperal fever was actually less among the women attended at home in the outdoor service, than in those confined in hospitals. The natural instinct of the female animal to retreat to its lair for the arrival of its young need not, in the opinion of the speaker, be regarded in the case of women, as an atavistic impulse which ought to be repressed.

Dr. Eden holds then that the public attitude, at any rate in Great Britain, has tended to become a little unfair to doctors, and especially to the family doctor, so far as the management of midwifery is concerned. It is pointed out that not all the emergencies of a confinement are capable of being foretold by the most careful medical supervision; that childbirth is inseparable from a certain amount of risk to life, both to the mother's life and to that of the infant; and that assuming an adequate degree of care and skill on the part of the doctor and nurse, they are no more to be held blameworthy for the casualties of midwifery than they would be for the unfavorable termination of a medical or surgical illness. Neither does he deem that the public has the right to demand of a family doctor that he be able to bring to a midwifery case the same high degree of experience and technical knowledge which are looked for in a consultant.

It is futile to think that there will be in Great Britain a hospital bed for every woman in labor, which is the dream of the idealists. Moreover, although the bulk of confinements will no doubt continue to take place in the homes of the patients, Dr. Eden thinks that this can be done with safety if adequate precautions are taken.

Midwifery in this country as well as in other lands takes a greater toll by far than is necessary. Also owing to lack of antenatal care and the want of proper management during labor and insanitary conditions of the home, not only do an undue number of fatalities happen but many women are rendered invalids for life. These facts appear to be agreed upon generally and so impressed are the British Ministry of Health with the unsatisfactory situation in this respect that memoranda have been devoted to the subject in which some of the more obvious drawbacks have been detailed and remedies suggested. Of course, it is beyond the range of human endeavor to provide at once maternity homes or hospitals for all obstetrical cases or even for a large proportion of them, but the more there are the better it will be for the woman in labor. It is said that the training of the medical student in obstetrics and gynecology is inadequate, and that the course in this important branch of medicine and surgery should be longer and more carefully taught and supervised. Proper antenatal care is a long step in the right direction and it is encouraging to know that this precautionary measure is proceeding apace. The subject of midwifery has been neglected and it is well that the limelight of publicity should be thrown upon it. It may be said that this country leads the world in the number of its maternity and lying in homes and in the facilities generally for providing for the skilful care of the lying in woman.

ORPHANS

A revival last spring of *The Two Orphans,* a play which in the early 80's of the past century held the interest of record breaking throngs for many years, passed its way with a bare notice. The piteous scenes which brought sincere tears to eyes of persons half a century ago no longer carried their effect with our audiences of today, largely because the two orphans, with their trials and tribulations, must have seemed almost grotesquely unreal. We do not know the abused, underfed, exploited orphan of fifty years ago, who has vanished with *Tom the Bootblack* and *Phil the Fiddler* and other pathetic waifs of the Horatio Alger period. Even the "poor little orphans" of the asylum of twenty-five years ago, dressed somberly alike in cheap calico who were paraded through Main Street now and then to the interested awe of gaping bystanders, are already becoming a shadowy memory. And the time has come when many of the most experienced experts in this field believe that the orphan asylum—as such—is doomed. At least it is a fact that less orphans are coming, year by year, to asylums. Indeed there seem happily to be fewer and fewer orphans each year in the community.

The reason why the orphan asylum population is decreasing is due in part to the growing tendency to board out children who have been bereft of parents for one reason or another, in carefully selected and officially supervised families. This method is cheaper for the institution, as well as preferable to the average child, for a stigma attaches to the orphan asylum, less, to be sure, than that associated with insane asylums or prisons and correctional institutions, but sufficient to make the normal boy or girl welcome the opportunity to live outside of the asylum building, to attend the local school, to participate in the joys and strifes of the ordinary household life of the foster family.

The causes contributing to the decrease in orphans as a whole are numerous; among the most prominent being the increased longevity of the average man and woman, to whose life modern science has added on an average of five to ten years—just long enough to prevent many of their children from becoming dependent because of the added years of parental care. Other factors are the extension of working men's compensation and insurance systems, which provide for support in case of sudden death of the father, the widow's pension funds operative in many states, and decreased immigration of foreigners with their large young families, where the death of the wage earner immediately throws several children into an institution. Thus it has come to pass that many of the orphan asylums do not receive enough applications to keep their capacity filled—in some cases they are only two thirds occupied—and of course all this is cause for congratulation, a happy corollary of the solution of some of man's social problems in economic and hygiene fields.

But another change has been noticed in orphan asylum population aside from the diminution in gross numbers. It is the type of child which is coming in constantly increasing proportions, namely, the abnormal, problem, or psychopathic child. A moment's reflection will reveal the reason. When one parent is removed by an untimely death, the surviving mother or father will often find it feasible, with the aid of modern social agencies, to retain the normal child, but feels that, without the help of the departed parent, he is unable adequately to handle the difficult pedagogical problems presented by the more difficult child, and consents to its transference to an institution. The number of full orphans of normal parentage has become comparatively small, but in their stead has come an increasing number of children, from disrupted homes or deserted by one or the other parent, or separated from parents considered by the courts to be unfit custodians of their own offspring. These children start life hampered by unfavorable psychic traits in so far as these may be considered directly transmissible and with the heritage of an environment fraught with neglect, unhappiness, and brutality in their earliest formative period.

While the orphan asylum, especially the modern cottage plan institution, does not seem to have entirely outlived its usefulness, even with our changing community life, there is an obvious tendency to admit to the institution a proper and increasing number of problem children, those suffering from stealing, lying, emotional outbursts, sexual deviations, rather than the more tractable "normal" boys and girls.

It is these particular deviations of conduct which present day psychiatry is attempting to unravel and correct and to study in the hope of the prevention of crime and delinquency in the generations to come. The immediate future may perhaps see some modern model orphan asylum converted into an experimental hospital school for the individual examination of this type of person who is often recognizable at a very early age. Certainly careful work undertaken at this youthful period, disheartening as it appears with the resources now at our command, would seem to offer more hope for alteration, cure and scientific enlightenment than similar efforts which have been undertaken in prisons and reformatories, when habit formation has become inured and set.

HETEROPHORIA

Heterophoria, or the tendency of one eye to deviate in one or another direction in consequence of imperfect balance of the ocular muscles, commonly known as loss of orientation, occurs after convalescence from the enucleation of an eye.

Mr. Percy Dunn, in the *Lancet*, July 10, 1926, deals with this condition from its several aspects, considering it chiefly from the economic point of view. As it is a question of as great interest in this country as in Great Britain, especially as regards its effect on the insurance companies, Mr. Dunn's opinions on the subject are well worth notice.

In the first place, it may be stated that the duration of the disability is generally a question of age. It usually varies between three and six weeks in young adults. In older men the period is longer. Further, no one eyed man should be permitted to resume his employment until accurate orientation has been established. If he does he runs risks of injury to himself and he is likely to be a source of danger to his fellow workmen.

From the economic point of view, the workman as long as the loss of orientation continues, in addition to the loss of an eye, is faced with this defective vision which largely reduces his earning capacity or may prevent him from following his trade. There-

fore, the insurance companies must compensate him until correct orientation has been restored, provided the disability has arisen as the result of accident in the course of employment. As a rule, the disability does not last long. However, the loss of orientation may become permanent and then the insurance company may have to pay a large sum for compensation in default of which the case may be brought into a court of law for settlement, and it is more than likely that the man will become a pensioner for life of the insurance company concerned. While this is a rare happening, it is one which may arise.

Lastly, Dunn considers the conditions under which heterophoria may assume a permanent form. It is pointed out that although binocular vision is present, heterophoria in one eye commonly exists as a latent form of disturbance of muscular equilibrium such as occurs in anisometropia, where the refraction in one eye is better than that in the other. In a general sense the better eye becomes the working eye, while the more defective one functions in a state of latent heterophoria, without, however, causing any disturbance to the vision. When, on the other hand, the working eye has been removed, with abolition of binocular vision, the latent heterophoria in the remaining eye becomes manifest, with the consequent loss of the power of accurate fixation, and the possible continuance of this as a permanent defect.

From the economic and compensatory viewpoint, some of the rules laid down with regard to the scale of compensation for loss or injury to vision by accident seem inconsistent. There appears to be room for reform of some of the existing rules for estimating the pecuniary value of certain forms of loss of vision due to accident.

There is one interesting point in the article in the *Lancet* referred to, and that is, that attention is rightly directed to the danger to himself and others of allowing a workman who has lost an eye and is suffering from a loss of orientation of doing any work which his defective vision may render dangerous.

ENGLISH SPEAKING CONFERENCE ON MATERNITY AND CHILD WELFARE

The fourth English Speaking Conference on Maternity and Child Welfare, in connection with the British National Association for the Prevention of Infant Mortality, was opened on July 1st in Caxton Hall, Westminster, more than seven hundred delegates being present. Sir Arthur Stanley presided at the opening session, his place being afterwards taken by Dr. Charles Hastings, medical officer of health of Toronto, Canada. Sir Kingsley Wood, president of the Congress and parliamentary secretary to the minister of health, in the absence of Mr. Neville Chamberlain, the minister of health, welcomed the delegates and said that the conference represented voluntary workers, members of the chief local authorities in the country, and supporters from overseas.

What the ministry wanted to see in connection with all health problems was a partnership between all voluntary organizations, local authorities, and government departments. The work of voluntary workers in connection with maternity and child welfare was one of the best features of the national life of Great Britain. The number of antenatal centres had increased during the past two years from 564 to 641, the number of maternity beds, in hospitals and homes, from 1,945 to 2,226, and no fewer than 1,347 were maintained by voluntary agencies. The number of infant welfare centres increased from 2,001 in March, 1924, to 2,218 at the present time. The 756 maternity and child welfare centres were run by voluntary agencies. There were 85 day nurseries run by voluntary effort and all but one of the 104 homes in which mothers and babies were kept together were maintained by voluntary funds. The infant death rate had fallen from 154 in 1,000 in 1900 to 75 in 1,000, a remarkable achievement. On the other hand, during the past twenty years there had been practically no diminution in the rate of maternal mortality, and the rate for deaths in the first month of life, and for stillbirths had been scarcely affected.

Obituary.

WILLIAM FRANCIS CAMPBELL, M.D.

Brooklyn

Dr. William Francis Campbell, one of the leading physicians and surgeons of Brooklyn, died in the Presbyterian Hospital, Manhattan, on September 8th, at the age of sixty-one. Dr. Campbell had won a high place in abdominal surgery, and it is a singular and unfortunate coincidence that he should have died after an operation for gallstone disease, an operation which he himself had many times performed and in which he was particularly successful.

Dr. Campbell was a native of Brooklyn. He was graduated from New York University in 1887, and took his medical degree from the Long Island Hospital Medical School, in which he later became professor of anatomy. At various times he acted as surgeon to the Seney Hospital, the Swedish, the Jewish, the Bushwick, and the Jamaica hospitals, and was for many years surgeon in chief of the Trinity Hospital. He had been president of the New York State Medical Society and the Kings County Medical Society and was a member of numerous organizations. He was the author of several books on surgical subjects, his *Surgical Anatomy* and *Surgical Diseases of Children* being especially well known.

BAD NEUENAHR

A Study Tour of Europe in 1926

RICHARD KOVACS, M.D.
New York

(*Cotninued from page* 371)

GERMANY

Hamburg, the big commercial port, situated along the Elbe River, and with beautiful residential sections around the two Alsterbasins, was the first German city visited. Among its excellent medical institutions we saw the unique Institute for Tropical Diseases, nicely built on a hillside overlooking the harbor. Many important researches in tropical pathology were effected in this institute, which also gives regular courses to ship surgeons and other physicians. In spite of the loss of all German colonies, this important work is going on just the same. Professor Nocht, the director, was absent in his official capacity as medical adviser of the League of Nations, and his associate, Professor Fulleborn, demonstrated the work. Next, the chief municipal hospital of Hamburg, the Eppendorfer Krankenhaus, was visited. It is a huge plant, with detached pavilions in splendid garden surroundings, housing about two thousand patients. The work of the surgeon, Kummel, and his successor, Siedeck, the internist, Lenhartz (deceased a few years ago), and others, made this institute known the world over. A large dental department, with special care to school children, is an important part of the hospital. Our party was entertained at luncheon on the beautiful grounds of the medical director, Professor Brauer, and many prominent Hamburg colleagues participated.

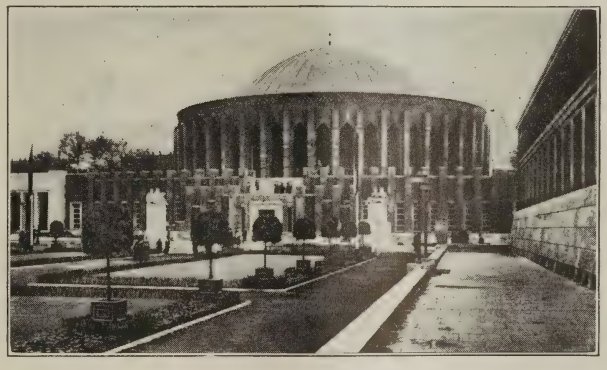
THE HEALTH EXHIBITION IN DÜSSELDORF

The hearty welcome in Hamburg found its continuation all along the Rhine cities and health resorts. A day was spent at Düsseldorf, one of the best laid out and most artistic centres of Germany, itself the seat of a medical academy for Postgraduate Study, in visiting the *Gesolei*, a monster health, social welfare and physical culture exhibition. As Professor Kraus, Rector of the Academy, emphasized, the exhibition along the banks of the Rhine, occupying 450,000 square yards on the right bank, was constructed with the heroic efforts over grounds two miles long that a few months before were serving as stables for the French troops and were deeply inundated a few weeks before the opening—in order to demonstrate that Germany has not lost its spirit for peaceful scientific research and progress. In speaking to German physicians, they all admitted that they, as the middle classes in general, have lost all of their savings and reserves, and are being reduced to one half to one third of their former incomes, but have resigned themselves to the situation, and see their

Roof Treatment on Lindenburg Hospital, Cologne
(New University Building)

hope, as well as that of their country, in uncomplaining, strenuous work.

Housed in imposing buildings, commensurate with Düsseldorf as an artistic centre, the great exhibition offers an amount of material which is simply overwhelming. Infant welfare work has its own building; "man in his relation to nature" shows the effects of climate and temperature; "history of mankind" portrays the development of the human race, beginning with prehistoric exhibits; "the transparent man," a most wonderful exhibit of the Dresden Museum of Hygiene, represents years of painstaking work, and makes every part of the full sized body, including bones and inner organs, visible and transparent like a microscopic slide. There is an exhibition of the history of medicine and natural sciences, a "doctor's house" with exhibits relating to the medical profession. In direct relation to disease there are sections on tuberculosis, on the care of nervous disorders, of the deaf, crippled and blind, on occupational diseases and industrial hygiene, on tropical medicine, on antialcohol work, on hospital and sick nursing (with the collaboration of the medical faculties of all universities) and of the international work of the League of Nations preventing epidemics. There are special sections on housing, on food and nutrition, on sport and physical exercises, on heredity and race hygiene, on social welfare and public assistance, and many others, all with characteristic neatness and thoroughness.



Planetarium, Düsseldorf

Of enormous general interest is the planetarium, a work of the great optical firm, Zeiss, which is a complete moving representation of the entire stellar system on the inside of a huge dome. As we sit underneath, the huge auditorium becomes by degrees completely dark, and a lecturing astronomist makes the planets, the stellar combinations, the moon, the milky way, and the complete firmament appear singly or in groups, and their exact movements can be reproduced at any desired speed. A miniature railway takes the visitors, without fatigue, from one end of the exposition to the other. Among the many visitors from near and far we noticed the numerous groups of school children taken there as part of their vacation. We feel safe in stating that the Düsseldorf exposition is the greatest health educational undertaking ever attempted.

COLOGNE

The historical city of Cologne (Köln), with its imposing dome overlooking the Rhine, is the seat of a university, the medical faculty having been created a few years ago out of the former Academy for Practical Medicine. We saw its clinical teaching department in the fine municipal hospital, Köln-Lindenburg, where we were greeted by Geh. Rat. Siegert, professor of pediatrics. We saw a most interesting and unique demonstration by Professor Schott of the carotissimus reflex in the dog and in man, a demonstration by Professor Zinsser of treating facial defects, especially those of the nose, by a prothesis made by the patient himself with a gelatine mixture out of a model furnished to him. Professor Dietrich showed very fine pathological specimens, and Professor Tilmann demonstrated interesting surgical work for epilepsy. A splendid luncheon in the physicians' casino ended our visit.

BAD NEUENAHR AND WIESBADEN

Two hours from Cologne, in the valley of the Ahr, a rapid running tributary of the Rhine, lies the picturesque and attractive spa Bad Neuenahr, at the foot of an impressive basalt mountain. It is a comparatively new resort, its warm springs having been discovered only seventy years ago by a wine grower whose grapes would not ripen on a certain part of his property where the ground was always wet. Today these springs occupy the unique position of being the only alkaline thermæ of Germany, issuing

Group of Physicians in Front of Hospital de la Pitie, Paris

Group of American Physicians in front of *Kurhaus,* Wiesbaden

at a degree of 96° F. The well known Apollinaris spring is also located in Neuenahr. Kurdirektor Rüttner showed us around the beautiful modern baths, which include complete hydrotherapeutic outfits, thermal, Russian, sand, mud, light and other baths, radium emanation and inhalation rooms. The mineral springs indicated in a score of important medical conditions, arise in great open basins, the *Sprudels.* At the time of the American occupation, a lady rushed indignantly one morning into the office of the *Kurdirektor,* as she had found a nude man in the basin, when she went for her morning drink. He proved to be one of the doughboys who mistook the *Sprudel* for a tub. The wonderful dinner and entertainment in our honor on the eve of July 4th proved, however, that there were no hard feelings left. The surroundings of Neuenahr, vineclad, ragged hills topped by castles and ruins, at their base swift running mountain streams, furnish as romantic sights as ever delighted the hearts of tourists.

Taking the most wonderful part of the Rhine trip from Coblenz to Bieberich, the landing station for Wiesbaden, we arrived at this oldest and largest of the German spas, situated in a closely wooded valley of the Tannus mountains. Even Pliny mentions the warm springs of *Mahincum* where the fourteenth legion erected a castle. Nowadays not less than twenty-seven active springs yield approximately two million quarts of water daily, which is used for bathing, drinking and inhalation. The drink cure is carried out daily on the fine promenade of the Kochbrunnen, and is set to music. A magnificent municipal establishment and sanatorium, the Kaiser Friedrich Bad, completed just before the war, contains a most complete equipment of every hydrotherapeutic and physiotherapeutic measure known. Before the war the average yearly number of visitors was 200,000, which is now reduced about one half. We noticed the continued Allied military occupation, Wiesbaden being the headquarters of the Second British Rhine Brigade. A British officer, when spoken to about our surprise at still finding a military occupation, gave the characteristic reply, "So are we." The occupation, however, seems to be going on very amicably, especially as Wiesbaden offers such an ideal combination of a spa with metropolitan attractions. The day of our arrival being July 4th, we were guests of honor on the terrace of the wonderful Kurhaus, and witnessed some elaborately artistic fireworks, and next day the municipality tendered a splendid banquet to us. The Wiesbaden Medical Society took an active part in all arrangements for the study of the various institutions, and we heard the announcement that funds were appropriated to establish and maintain a great institute of balneology and metabolism in Wiesbaden. As the first one of its kind in Germany, one of its objects will be to put the extensive empirical knowledge of the therapeutic action of mineral waters and hydrotherapeutics on an exact scientific basis. A very delightful excursion to the champagne factory at Eltville, a suburb of Wiesbaden, was made on the second day of our visit.

HEIDELBERG

The world famous university city was visited next and two days spent there. The ruins of the castle in beautiful position overlooking the Neckar River are impressive in the daytime, and leave a never to be for-

gotten reminiscence of romance when illuminated at night, as we saw them. The *carcer*—student prison—and the students duelling are other unique sights, although the latter pastime has just been made an offense punishable with five years of imprisonment by the new German democracy. The medical faculty of

Hôtel Dieu, Paris. Central figures, Prof. Gilbert, Internist, and Prof. Hartmann, Surgeon

the university, under the leadership of Professor Morro as Dekan, met us at a banquet full of friendly sentiment. The next day was spent in listening to the regular lectures in the historic lecture rooms in which so many men of international fame have taught. Our greeting by the student body was also quite hearty, consisting, according to best German custom, of continued loud stamping. Professor Krehl gave a medical, Professor Morro a pediatric, and Professor Enderlen a surgical clinic, and Professor Menges one in gynecology. Heidelberg offers splendid post-graduate facilities to American physicians, and, according to the decision of the faculty, there are no charges whatsoever for those who join any clinic for any length of time. Unfortunately, there is not enough English spoken there.

BADEN-BADEN

Baden-Baden, the last German health resort visited, lies in the valley of the little river Oos, in the northern part of the Black Forest. Its history dates back 1800 years, as the *Roman ruins*, which we saw subterraneously, are the remnants of extensive hot baths built by Emperor Hadrian. Around the river there is a very extensive *Kurpark*, magnificent gardens with many subtropical trees and shrubs, surrounded by pineclad mountains, some of them 3,000 feet high. The springs are radioactive saline thermal springs, and their curative value in a great number of chronic inflammatory conditions is world renowned. The great cure establishments, the Friedrichs and Augusta Bad and the Inhalatorium are directly under the control of the State of Baden and contain a therapeutic equipment of first order. The Kurhaus is a magnificent building in which international history has been made, and the banquet given in our honor there surpassed in splendor and cordiality everything enjoyed before. The next day we were taken for an automobile trip through adjoining parts of the Black Forest.

SWITZERLAND

Eight days were spent in Switzerland, "the tourist's paradise," and a partial holiday of clinics observed. We saw attractive Zurich with its large lake surrounded by mountain ranges and its fine shops; beautiful Luzerne on the Viervaldstatter See, with the Rigi, Stanserhorn and Pilatus towering right above, and the celebrated "dying lion" chiseled in the face of a rocky cliff; Interlaken with its cosmopolitan life; and ascended the *Shynige Platte*, enjoying a unique sight of the Mönch, Jungfrau and Eiger; and, as a final climax, making an excursion from Geneva into the French territory of Chamonix, ascended the wonderful *mer de Glace*—one of the glaciers of the Mount Blanc range.

In Berne, the capital of Switzerland, two days were spent attending the University clinics. Our host, Professor de Quervain, a worthy successor of Kocher, showed thyroid and traumatic surgery, and

Court of Army Museum, Val de Grace, Paris. Professor Dopter, Curator and Dr. Fred H. Albee

also demonstrated his good results with resection of gastric ulcer. The well known internist, Professor Sahli, gave a clinic on dysbasia angiosclerotica. He contends that our methods of measuring blood pressure give unreliable results on both systole and diastole. He measures the systolic pressure alone with a delicate spring and water balanced graphic manometer. A model physical therapeutic institute is attached to his clinic. The language of teaching in Berne, as well as in Zurich, is German, while in Lausanne and Geneva it is French. We saw the unique cretin farm, an institution for the care of the numerous cases of congenital or acquired cases of cretinism due to hypothyroidism.

(To be concluded)

News Items.

New School for Blind.—A special free school, conducted on Pelham Parkway by the New York Institute for the Education of the Blind, has been opened to pupils from the neighboring counties of both New York and New Jersey. An attendance of more than one hundred is anticipated.

Illinois Mental Hygiene Committee.—Announcement has been made of the organization of the Central Illinois Committee for Mental Hygiene, with the following officers: Honorary chairman, Dr. Frank P. Norbury; chairman, Dr. A. L. Bowen; secretary-treasurer, Mrs. S. J. Hanes. In addition to these officers, nine vice-presidents representing various districts have been appointed, and twenty-five directors elected.

Coming Meetings.—Future conferences and conventions of interest include the following: National Tuberculosis Association, October 4th-7th, Washington, D. C.; American Public Health Association, October 11th-14th, Buffalo; Health Officers and Public Health Nurses, October 12th, Buffalo; Association of Military Surgeons of the United States, October 14th-16th, Philadelphia; National Recreation Congress, October 18th-22d, Atlantic City; Pan Pacific Conference on Education, Rehabilitation, Reclamation and Recreation, April 11th-16th, 1927, at Honolulu, Hawaii.

New Bellevue Psychopathic Pavilion.—Announcement has been made by Joseph V. McKee, president of the Board of Aldermen of New York City, that it has been recommended to the Board of Estimate that the city acquire as the site for the proposed new Psychopathic Pavilion of Bellevue Hospital the block bounded by Twenty-ninth and Thirtieth Streets. First Avenue and the East River. The new pavilion will cost approximately $3,000,000, and, that the project may not be delayed, $30,000 of this amount has been made available to permit the employment of an architect to prepare plans and specifications.

Lectures at the New School for Social Research.—Among lectures of interest announced by the New School for Social Research, New York City, are the following: Selected Chapters in the Theory and Practice of Psychoanalysis, by Dr. S. Ferenczi of Vienna; Conduct and Its Disorders in Childhood and Adolescence, by Dr. Ira S. Wile; Fundamental Problems in Adult Education, by Everett Dean Martin; Educational Psychology, by Leta S. Hollingworth, Ph.D.; and Mental Hygiene: Its Personal and Social Aspects, by Dr. Frankwood E. Williams. The fall term of the school began on October 4th.

New York Health Demonstrations.—Arrangements have been made so that those attending the annual meeting of the American Public Health Association in Buffalo, October 11th-14th, may take advantage of the opportunity to visit two of the New York State Health Demonstrations which for the past few years have been receiving financial assistance from the Milbank Memorial Fund. Two of these demonstrations are situated respectively in Syracuse and in Cattaraugus County, both conveniently situated respectively in Syracuse and in Cattaraugus County, both conveniently situated for a visit from Buffalo, and the third is in New York City.

Research on Surgical Supplies.—According to Dr. E. R. Weidlein, director of the Mellon Institute of Industrial Research, University of Pittsburgh, the firm of Johnson & Johnson, manufacturer of surgical supplies, New Brunswick, N. J., has established at the institute a fellowship that will study the exact requirements of surgeons and other medical specialists in the way of sundries, with the joint aim of developing new supplies that are needed and of standardizing the products now in use. An investigation will also be made of the processes of renovating used supplies, and several other Industrial Fellowships of the Institute will coöperate in devising satisfactory procedure.

Dr. Frederic H. Slayton will be in direct charge of this comprehensive research. The fellowship will be operated in a totally unbiased and independent manner, in accordance with the Mellon Institute system, and all its investigations will be conducted primarily for the benefit of the public. It is the plan to report the results in appropriate periodicals as the various phases of the studies are concluded.

In carrying on this work, Dr. Slayton and the Institute's executive staff invite the concurrence of all interested organizations. They are especially desirous of securing the close collaboration of hospital executives and of members of the medical profession.

American College of Physical Therapy.—The American College of Physical Therapy will meet at the Drake Hotel, Chicago, October 18th to 22d. As arrangements now stand, the first two days will be devoted to instruction classes. Plans are on foot to enlist the services of some eminent Europeans to participate in the program.

Travel Study Club Elects Officers.—At the completion of its recent European study tour, the Travel Study Club of American Physicians elected the following officers: President, Dr. Fred H. Albee, of New York City; vice-presidents, Dr. Edward B. Heckel of Pittsburgh, and Dr. John P. Lord, of Omaha; secretary, Dr. Richard Kovacs of New York. Plans are being made for the next study trip, covering Central Europe, including Germany, Austria, Czechoslovakia, Hungary and Italy.

Columbia to Extend Public Health Work.—Announcement has been made that Columbia University's public health work, carried on through the DeLamar Institute of Public Health, will be extended this year. The object will be to supply to the lay public through channels of popular education the benefits of reliable information in the protection and development of human health and in the prevention of disease. Dr. Haven Emerson is director of the DeLamar Institute, which is a part of the School of Medicine. Beginning with the coming academic year, the institute will award the degrees of Master of Science and of Doctor of Philosophy.

First Polish Nursing School Established.—The profession of trained nursing was definitely established in Polish hospitals early in July, according to a dispatch to the *New York Times,* when Miss Amelia Greenwald of Alabama officially turned over to Polish control the most important nursing school ever attempted in Warsaw. The institution, which physicians declare will revolutionize medical conditions throughout the country, is the gift of the Jewish people of America through the late Joint Distribution Committee. Its success through the sole efforts of Miss Greenwald, after three years of struggling against nearly insurmountable obstacles, is one of the most interesting results of post war relief work abroad as well as one of the highest importance. Miss Greenwald worked during the World War at several base and evacuation hospitals, and at the embarkation camp at Brest had charge of the French war brides.

Personal.—Prof. Friedrich von Müller delivered the Edward G. Janeway Lectures at the Mount Sinai Hospital of New York on October 1st and 2d. He spoke on the nervous system and internal medicine.

Dr. Herman Goodman, of New York City, recently addressed the twentieth annual convention of the Illuminating Engineering Society, and also the convention of the American Electrotherapeutic Association. The first lecture was on Light in Medicine and Surgery, and the second on Physics and Biology of Light Dermatology.

Dr. Philip R. Lehrman, chief of the psychiatric clinic at the New York Postgraduate Medical School, and consulting psychiatrist at the Manhattan State Hospital for the Insane on Ward's Island, returned recently from a European tour of psychiatric centres.

Dr. C. A. Mills, who perfected the method used in isolating and purifying tissue fibrinogen, has been sent by the Rockefeller Foundation to Peking University for two years as instructor in medicine and for experimental and research work. Dr. Mills has been granted leave of absence from his position as professor of internal medicine at the Medical College of the University of Cincinnati.

Dr. S. S. Goldwater, director of Mount Sinai Hospital, New York City, has recently returned from a tour of European hospitals.

Dr. Pedro N. Ortiz, Commissioner of Health of Porto Rico, was a visitor in New York City during the summer. Dr. Ortiz visited also in Boston, Philadelphia and Washington.

Dr. Edouard A. Rist, of Paris, has been in this country as one of the delegates to the International Tuberculosis Conference recently held in Washington. Dr. Rist among other addresses made one before the annual clinical congress at Yale University, after which he was tendered a reception and banquet at the New Haven Lawn Club.

Dr. Tom A. Williams, who left Washington last winter to practise his specialties, neurology and psychiatry, in Florida, is recovering from a fracture of the humerus and has now resumed work at his office in the Exchange Building, Miami, Florida.

Book Reviews

ENDOCARDITIS

Studies on Bacterial (Infective) Endocarditis. By William S. Thayer. The Johns Hopkins Hospital Reports. Volume XXII, Fasciculus I. Baltimore, 1926.

This monograph by Dr. Thayer is based on careful clinical, anatomical and bacteriological studies of 198 cases of bacterial endocarditis, of which 138 came to necropsy. For the sake of comparison, twenty-four instances of uncomplicated fatal acute rheumatic heart disease were analyzed as well. Some of the results of this study are worthy of repetition. Terminal streptococcal infections in rheumatic heart disease are common. Over a quarter of the instances of acute myocarditis found in fatal streptococcal infections showed anatomically the characteristic lesions of rheumatic heart disease. There was only one case of bacterial endocarditis caused by other organisms in which rheumatic lesions were found as well. This suggests a close relationship between streptococcal infections and "rheumatism." Of the cases of bacterial endocarditis, fifty-five per cent. were due to the streptococcus, thirteen per cent. to the pneumococcus, twelve per cent. to the staphylococcus aureus, eleven per cent. to the gonococcus, four per cent. to B. influenzæ. The incidence of gonococcal infections is unusually high. Most of the cases of fatal rheumatic heart disease prevailed in the first two decades of life, the gonococcal infections occurred especially between the ages of twenty and thirty, streptococcal endocarditis prevailed in middle adult life, pneumococcal endocarditis in middle and later adult life, and staphylococcus aureus at all ages. In a short review it is impossible to bring out the many interesting facts resulting from Dr. Thayer's investigations which have extended over many years. The book well merits careful perusal. Most clinical statistical studies are rather unsatisfactory. Dr. Thayer's material is unusually complete and well arranged, and this, coupled with the critical analysis by a ripe and exceptionally able clinician, makes this monograph a model of its kind.

BLOOD SUGAR REGULATION

Studien Ueber die Blutzuckerregulation bei Epinephrektomierten Tieren. C. G. Sundberg (Doctorate thesis, University of Upsala) (also published in Svenska Lararesallskapets Handl., 1925, *51*, 61.)

In a ninety-eight page monograph, the author narrates his experiments on the blood sugar level of normal and suprarenalectomized rabbits together with their alimentary tolerance for glucose, levulose and galactose, using from two to five gms. sugar per kilo of body weight given orally as a twenty per cent. aqueous solution. He found that in normal rabbits the rise in the blood sugar began, on the average, about forty minutes after administration, whereas in suprarenalectomized rabbits this was delayed, in one case, as long as three hours. He noted, as has been observed by many others, that the blood sugar in suprarenalectomized rabbits progressively decreases to death after the postoperative hyperglycemia. Epinephrine causes hyperglycemia in suprarenalectomized as well as in normal rabbits. Suprarenalectomized rabbits are much more sensitive to insulin than normals—hypoglycemic symptoms being produced in a much shorter time and with less than one half the dose required for normals. He found no difference in the effect on the blood sugar of normal and suprarenalectomized rabbits following thyroxin injections. He made forty-seven transplants in a total of thirty-two rabbits and obtained necrosis of the transplants in sixty per cent., while in forty per cent. definite regenerating cortical transplants were recovered. Several excellent photomicrographs illustrate this regeneration. In comparing the duration of life of doubly suprarenalectomized rabbits with and without transplants, he shows that the lives of those rabbits having active transplants were prolonged. He found accessory suprarenals in but seven of forty-two rabbits examined.

PHYSIOLOGY OF NUTRITION

Troubles des Echanges Nutritifs. Par Professeur Ch. Achard. Paris: Masson et Cie, 1926.

In this excellent book Achard first describes the physiology of nutrition (exchange of all material required). Based upon the latter the disorders arising from the elementary disturbances of these ingredients are analyzed and the clinical morbid phenomena explained. The total amount of iron, which plays such an important part in the life of every living organism, amounts in a full grown human being to three or three and a half grams. The body receives the iron principally in organic combination, contained in the different foods. Foods rich in iron are the following: red meats, the yolk of eggs, green vegetables (spinach, cabbage, asparagus), and red fruits. The total daily quantity of iron eliminated by the body amounts to thirty milligrams, of which one to eight milligrams appear in the urine. The hemoglobin of the blood contains most of the iron and by its quality of binding oxygen loosely makes life possible. When blood is destroyed by the processes of life, the hemoglobin is changed into bilirubin, an isomer of hematoporphyrin, a substance not containing iron. The bilirubin is then excreted by the liver in the bile, while the iron is temporarily stored in the liver.

Achard's work is extremely useful and highly commendable.

LOCAL ANESTHESIA IN NOSE AND THROAT SURGERY

Local Anesthesia in Otolaryngology and Rhinology. By James Joseph King, A.M., M.D. With a supplement on the Toxic Effects of Local Anesthetics, by Emil Mayer, M.D. Preface by Robert Hatcher, M.D. Twenty-one Illustrations and a Folded Table of Cases. New York: Paul B. Hoeber, Inc., 1926.

As local anesthesia is gradually but surely gaining ground in every branch of surgical endeavor, its advantages as well as its limitations are becoming clearly and positively established, so that in the near future we shall be in possession of an agency of a definite nature to be applied with safety and due caution.

Dr. King's work is a decided step forward in this direction, and he has performed a distinct service to otolaryngology by collating and presenting in a readable and well digested form everything of importance

concerning local anesthesia in the surgery of the ear, nose and throat. The value of the work is greatly enhanced by the author's personal surgical experience both in private and hospital cases. He aims—and does it successfully—to bring order out of the chaos in the minds of many of the operators both as to the nature and methods of employment of the various local anesthetics that have been responsible for avoidable mortality, by elaborating on his own technic and that of other responsible operators whereby anesthesia can be accomplished safely and quickly. The description of the author's methods is gone into most thoroughly and minutely, so that a careful reader can acquire the technic without great difficulty.

The second half of the volume is taken up with reports of the Special Committees of the American Medical Association on the toxicity of local anesthetics in nose and throat work, that should be carefully perused by every practising laryngologist.

The book contains an interesting table of cases. It is heartily recommended as a useful guide for every nose and throat man.

THE NASAL SINUSES

Pathology and Treatment of the Inflammatory Diseases of the Nasal Accessory Sinuses. By Professor Dr. M. Hajek, Chief of the Laryngorhinootological Clinic, University of Vienna. Translated and edited by Joseph D. Heitger, A.B., M.D., and French K. Hansel, M.D., M.S. Fifth Edition, completely revised and enlarged. In Two Volumes. St. Louis: The C. V. Mosby Company, 1926.

Dr. Hajek's work in the original German has been considered a classic these last twenty-five years, written as it was by one who is a pioneer in the field of sinus disease, and who still remains as one of our greatest authorities on everything pertaining to the science of sinuses. The English edition is a distinct gain to our as yet comparatively meagre literature on the subject, the more so as it covers the entire field in a thoroughgoing, systematic and comprehensive manner. In this work is incorporated the experience of a prominent teacher and practitioner extending over a period of more than forty years, as a result of which, as the translators truly observe in their preface, the subject of sinus disease is "for the first time placed on a solid foundation."

The treatment of the individual sinuses is preceded by the general part which embraces within its 150 pages considerations as to the normal anatomy, pathogenesis, symptomatology and diagnosis of paranasal sinuses in general. Then every individual sinus is gone into with characteristic attention to details and a scrupulous avoidance of nonessentials that tend to enhance the value of the book as a guide to the practising physician. A decidedly refreshing feature, at the present time, when a veritable *furor operativus* in things rhinological is raging, especially among the younger laryngologists, is the author's leaning toward conservative treatment of sinus conditions before the final, inevitable resort to operative intervention. It would be a work of supererogation to pick out any part of the book for special praise, but the reviewer was particularly impressed by the extensive chapter on inflammations of the maxillary sinus that contains within its pages all of our present knowledge on the pathology and treatment of this most important subject.

A comprehensive bibliography adds materially to the value of the work.

DISEASES OF THE EAR

Politzer's Textbook of Diseases of the Ear. Sixth Edition, revised and largely rewritten. By Milton Ballin, M.D., Ph.B. With 302 Illustrations. Philadelphia: Lea and Febiger, 1926. Pp. xiii-776.

The reappearance, after a protracted interval, of a new English edition of Politzer's work on diseases of the ear is a welcome addition to our ever growing otological literature in which it will justly occupy a position second to none. The editor, fully aware of all the advances made in this field during the period intervening between this and the preceding edition, has revised and largely rewritten the entire work, has added to the body of the book, and has eliminated what appeared to him as nonessential or antiquated, without impairing the intrinsic value of the original work, thus bringing it fully up to date, that it may truly fulfill its mission of a textbook for practitioners and students.

We were particularly impressed by the thoroughness of the anatomical and pathological data, while the treatment is everywhere characterized by a refreshing conservatism which is the more valuable as it comes from one who stands on a firm ground and has perfect control over his subject. The chapters on the methods of physical examination of the organ of hearing and middle ear disease deserve special mention for their thorough, lucid and painfully detailed description, where nothing is taken for granted, and every important point is clearly and forcibly emphasized.

More copious as well as more recent references to American authors would greatly enhance the value of this work.

MEDICAL RELIEF IN RUSSIA

Report of the Medical Director of the American Medical and Sanitary Relief in the Russian Famine, 1921-1923. By Col. Henry Beeuwkes, M.D., assisted by Maj. W. P. Davenport, M.D. Special Edition.

This special edition of the directing physicians' report of American medical and sanitary relief in the Russian famine during 1921-1923, in variance with those distributed generally, contains photographs of disease and famine manifestations furnished only to the medical profession and press.

The report states that the epidemics following in the wake of Russia's disorganization and famine in 1921 threatened not only the whole population of civilized European Russia, but those of Eastern and Central Europe as well. The results of the large scale medical relief in combat of epidemic causes shows what can be done by organized effort even when mobilized and put into action on short notice. Uncovering the facts of decline of public health, of agriculture, industry and welfare, the report carries much valuable source information on conditions in Russia after war, revolution, and the four years of social experimentation, on a great mass of population.

Cholera among the Russian people had increased over twenty fold from 1919 to 1921; typhus, only a nominal menace in 1919, had leaped from 130,000 cases to nearly three million in 1920, and again in 1921 threatened to increase far beyond control; relapsing fever, normally not exceeding 30,000 cases annually, reached over two million. Step by step with these typhus fever rapidly doubled, then trebled, and more, as also did malaria, tuberculosis, hunger edema,

and other deficiency diseases. All the while starvation, hunger, weakness and exposure, insanitation, shortage of even the most elementary medicines, made for ideal propagation of almost every known disease.

Upon the initiative of Herbert Hoover, backed by general appropriations by Congress and the American Red Cross, the comparatively small unit of American physicians by departing at once for Russia were able to supply overworked Russian physicians and overcrowded hospitals with pitiably needed medicines and supplies. Through the organization of a wide combat of epidemics, and hand and hand with America's sixty million dollars famine relief fund, this medical unit had not only to supply eight million dollars' worth of medical relief, but also to get supplies transported over broken down railways to broken down institutions, assuring aid at strategic points. The work was in charge of Colonel Beeuwkes, assisted by Major Davenport and about sixty other American physicians from all parts of the United States.

In a preliminary section, the report outlines the development of medical practice in Russia from the time of Boris Godunov, through the reigns of Peter the Great and Catherine—the former was a physician of sorts—into the Zemstvo organization of rural medicine, down to the organization of the present Soviet Commissariat of Health. Other chapters treat of sanitation in Russia, hospitals, homes, and other institutions as the Americans found them; of food conditions, cannibalism, starvation, and their treatment. There is a detailed section on the epidemics which is a distinct contribution to medical knowledge of value both to the administrator and to the specialist.

The second part of the report records the actual carrying out of the American operations, and the peculiar problems met during the unprecedented campaigns, and should be of particular value to the organizer and student of social conditions as well as to the medical profession.

HYDROPHOBIA

Lyssa Bei Mensch Und Tier. Von Prof. Dr. R. Kraus, Dr. med. vet. F. Gerlach, und Dr. F. Schweinburg. Mit 69 Abbildungen im Text und 6 farbogen Tafeln. Berlin, Wien: Urban & Schwarzenberg, 1926. Pp. viii-464.

In spite of the marked progress that has been made in the methods of treating and preventing hydrophobia, this dread disease is still quite prevalent in civilized countries. Indeed, such a simple measure as the muzzling of all dogs has proved to be effective. Physicians, clinicians, veterinarians and hygienists ought to be familiar with this disease, especially in the diagnosis, the indications for prophylactic inoculation, the prophylactic sanitary measures. No complete work on this subject has been published during the last fifteen years. The authors have, therefore, assumed the task of supplying such a work and have practically produced a cyclopedia on the subject. They have not only reviewed all the available literature on hydrophobia, but have also published their own extensive experience of years. They state their own views on such practical questions as the etiology, postvaccination paralyses, prophylactic inoculation of man and dogs, etc.

Up to the present time, hydrophobia is the only incurable infectious disease. It is emphasized that it is the duty of legislatures to endeavor to provide conditions that will cause this disease to disappear wherever it is still prevalent, as it has actually been done in countries like Australia, Sweden, Denmark and Holland, where the disease is no longer seen.

The bibliography is most complete and includes the literature of the world. The book deserves the highest praise in every respect. It gives a complete discussion of every aspect of rabies in man and animals.

Medicoliterary Notes.

According to a booklet recently issued by the Field Museum of Natural History, of which Dr. James B. McNair is the author, ferric chloride is both a preventive and cure for most cases of ivy poisoning. Dr. McNair advocates a mixture consisting of one part by weight of ferric chloride with ten of alcohol and ten of water, to be applied to the skin and allowed to dry there before entering places where poison ivy grows, and also after possible exposure.

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The U. S. Department of Agriculture has set aside nearly eighty-four thousand acres to be called the Mount Hood Recreation Area, which will be administered for the use and enjoyment of the general public.

* * *

The perfect opening sentence for a book is found in Dr. Alvah H. Doty's book, *The Mosquito: Its Relation to Disease and Its Extermination,* which begins, "There are two reasons why the mosquito should be exterminated." If the rest of the book is as true as that, what a whale of a book it must be! D. Appleton & Company are the publishers.—*N. Y. Times.*

* * *

The oldest sun dial in America is located in Honduras, where the ancient city of Copan once stood, according to a report from the Carnegie Institution of Washington. This great sun dial consists of two hieroglyphic monuments, painted red, built four and an eighth miles apart so as to determine a line running nearly due east and west across the valley of Copan.

* * *

Because of numerous complaints following the recent increase in price for dog licenses in Germany, the government has agreed to make special concessions in the case of childless couples, persons over fifty years of age with small incomes, and deaf people so that they will be required to pay only one-fifth of the regular rates.

* * *

A report of the tests recently made by the U. S. Public Health Service to determine the amount of danger involved from running a gasoline engine in a closed space states that a small twenty-three horsepower engine discharges one and a half cubic feet of carbon monoxide in a minute, or enough to poison the air of a closed garage, ten by twenty feet in size, to the danger point in about three minutes.

* * *

Toxin antitoxin work in Mount Vernon, N. Y., has received a marked impetus through the showing in a local vaudeville theatre of moving picture films of diphtheria prevention work in the city schools, including "close ups" of the children and physicians. Instructive and interesting subtitles are given and a table showing the decline in diphtheria since the introduction of toxin antitoxin. . . . The making of the film was financed by the theatre where the showing was made. A copy has been purchased by the Mount Vernon Department of Health, which generously offers to lend it to other health departments for use in their communities.—*Health News.*

* * *

There is still a law on the French statute books, according to the *New York Evening Post,* that imposes a penalty on women who beguile men into marriage by means of rouge,

powder, perfumes and similar feminine aids. It reads: "Whosoever attracts into the bonds of matrimony any male subject of His Majesty, by means of rouge or powder, perfumes, false teeth, false hair, steel corsets, hooped petticoats, high heels or false hips will be prosecuted for sorcery and the marriage will be declared null and void, if the accused is convicted."

* * *

The Medical Department of the United Fruit Company has recently issued its very full and detailed fourteenth Annual Report covering the year 1925.

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In a recent statistical report it is estimated that 2,500,000 tons of soot are to be found annually in the atmosphere of London. Fireplaces, it is stated, produce five times as much soot as do industrial furnaces. Persons living in the country enjoy twenty per cent. more sunlight than the citizens of London.

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The Bereft is the title of a unique human document, with the subtitle, *A Series of Asylum Romances.* Dr. George Anthony Zeller, the author, is managing officer of the Peoria, Illinois, State Hospital. The book consists of nine stories, some humorous, some pathetic, based on incidents and characters of institutional life. The book may be obtained by application to the Department of Public Welfare, Springfield, Illinois.

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The *Literary Digest* boasts that one third of our physicians and surgeons are on its subscription list. But where, we wonder, does a doctor keep his copies until they are old enough to appear in the waiting room?—*The New Yorker.*

* * *

The Paris press reports that a new method for operating in the air and on fast moving conveyances has recently been devised by Dr. Jean Bouchon, a young French surgeon, formerly an assistant of the famous Doyen. The system, which Dr. Bouchon calls *fixodecapage,* consists of a series of five instruments cleverly constructed to do their work accurately while the ambulance, train or airplane is in rapid motion, and at the same time holding the patient firmly in position.

* * *

Opportunity, the Journal of Negro Life, published by the National Urban League, contains in its August issue two articles of interest to the medical profession. These are one instalment of the series of articles by Annaj Thompson on a Survey of Crime Among Negroes in Philadelphia, and Immunity to Disease Among Dark Skinned People, by Dr. Charles H. Garvin, of Cleveland, Ohio. Dr. Garvin is a member of the staff of Lakeside Hospital.

* * *

The Children's Bureau has recently issued as Bureau Publication No. 153 a pamphlet entitled *Standards of Prenatal Care; an Outline for the Use of Physicians.* No attempt is made in this publication to direct actual treatment, the physician using the outline being referred to standard works on obstetrics and other branches dealing adequately with the work. Two other useful contributions to obstetrics are reprints from the *American Journal of Obstetrics and Gynecology* of papers read at the thirty-eighth annual meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons at Hot Springs in September, 1925. These are The Incompatibility of Pregnancy and Fibroids of the Uterus, by Dr. George Clark Mosher, and the Report of the Joint Committee on Maternal Welfare.

* * *

A person signing himself—or herself—A Returning American, writes in the *Atlantic* for August an article entitled Home, in which an account is given of the writer's impressions of New York upon returning from a visit to England. This is a very timely and significant contribution to our present methods of life in the Great City. The first thing that was found to contrast with English cities, including London, was New York's unbearable noise, most of which is unnecessary since London does not have it. Another thing was the "utter breakdown of law and of protection to the citizen by his government in America." He tells us that in London it is not necessary to use armored cars for transporting money, and describes the transfer of five millions in gold arriving from South Africa to the Bank of England. "At the dock," he writes, "it was placed in an open dray, a tarpaulin was drawn over it, and it was driven to the bank with no guards of any sort." After commenting upon the terrible pace at which we are living and also spending our money, he writes in conclusion: "How long can American nerves and minds and the American soul withstand the pressure and pace of America's present insane and noisy life, and the increasing restrictions on independent thinking and individual expression? There are ample signs that a devastating financial and commercial panic is not many years distant. Will the newer rich who may arise after it lead us a livelier dance yet, or will the history of the orgies of extravagance following the Revolution and the Civil War be repeated and a period of returning sanity ensue after the financial bloodletting?"

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The *Monthly Labor Review* for August contains among other articles of interest a description of welfare work in the British coal industry, and a rather full summary of the Industrial Accident Conference held at Washington, D. C., July 14th-16th.

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The Section on Hygiene of the League of Nations has recently issued as Publication III a *Rapport sur le Voyage d'etudes de la Commission du Paludisme en Espagne.* This is one of the documents of which no English translation will be published.

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The *Franco-Russian Review of Medicine and Biology,* in commenting on the recent Pan-Ukrainian Hygiene Conference, gives a summary of a survey made among the peasants of the country. Through this it came to light that twenty-five per cent. of these never used soap; sixty-five per cent. used less than two pounds of soap per capita annually; and only eleven per cent. used more than three fourths of a pound a year; only two per cent. had washstands, and ninety-six per cent. possessed one towel; seventeen per cent. bathed only once a week, eighteen per cent. once a month, and sixty-three per cent. hardly at all. These conditions were not due to poverty alone, for it was found that the wealthy peasants often did not use more than a pound of soap a year.

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The Mexico Department of Health has issued orders banning the dancing of the Charleston in public dance halls, on the ground that it is so violent that it is likely to cause heart failure. The order adds that the dance is "ugly and ungraceful; that it consists of contortions and the loosening of joints which are prejudicial to health, and that it is antagonistic to all artistic appearances." The department appeals to cafés and private ball rooms to abandon the Charleston for the above reasons.

* * *

Austrians are the greatest meat eaters in the world, according to a recent report. Italians eat the least. The annual per capita consumption in Austria is 245 pounds; in Italy, 23 pounds. Americans consume 118 pounds, the English 110, Norway and Sweden 86, the French 73, the Germans 70, and the Spaniards 49.

* * *

The Division of Venereal Disease of the U. S. Public Health Service has recently issued a Venereal Disease Manual for Social and Corrective Agencies, the purpose of which is to further acquaint individuals and organizations interested in education and social welfare with the role played by venereal diseases in the development of serious pathologic conditions which adversely affect the social structure. The book is designed for court and probation officers, social workers, nurses, visiting teachers, jailers and wardens, policemen and policewomen, and superintendents and matrons of homes for the dependent, delinquent and defective classes.

* * *

A new method for the treatment of diabetes through the injection under the skin of small quantities of nickel and cobalt has just been made known to the Academy of Science of Paris by Professors Gabriel Bertrand and Mac-Heboeuf, two French doctors. So successful has been the application of this treatment that all trace of sugar disappeared in many instances. However, a series of careful observations made by Prof. Francis Hathaway and Mlle. Levine confirm the general effectiveness of the new treatment.—*N. Y. Times.*

Abstracts from Current Literature

GYNECOLOGY AND OBSTETRICS

Treatment of Uterine Infections by Drainage.—Remington Hobbs (*Clinical Journal,* July 28, 1926) maintains that in septic cases with retained products the patients do far better if drained and no attempt made at operative intervention. The fact that intermittent temperatures occurring in cases of chronic inflammation of the uterus are controlled by drugs which relieve congestion, proves clinically that the primary cause is one of chronic inflammation of the endometrium. Therefore, it is not necessary to use the curette except for diagnostic purposes, viz., carcinoma or submucous polypi; still less is it necessary to perform hysterectomy. The use of strong antiseptics is likely to be followed by an increase in temperature, pain, discharge, and hemorrhage. Drugs such as glycerine and salt solution encourage the antimicrobic flow of blood through the infected tissues and affect the course of the disease. The persistence of red lochia is one of the most important signs of sepsis following labor or miscarriage. The uterus cannot be cleaned in one attempt. The problem of saving the most serious cases, those with blood infection, remains yet to be solved; to this end continuous research is necessary with skilled laboratory workers acting in close collaboration with those who understand the technic of draining the infected tissues.

Vaccinotherapy of Gonorrhea in the Female.—Inasmuch as Friedr. Wolff (*Zentralblatt für Gynäkologie,* April 17, 1926) was not satisfied with the results he obtained with stock vaccines. He therefore used his own vaccines which he prepared from a clinically virulent case of acute gonorrhea or an acute complication of an old gonorrhea (even from infections in the male), to which was added a 0.5 per cent. carbolic acid solution. Old vaccines, both autogenous and stock, become decomposed and form endotoxins, which frequently produce unpleasant byeffects. The dose given was five hundred million bacteria, which was gradually increased at intervals of three days. The author injects the living cultures subcutaneously. The immune bodies are apparently developed in the tissues, sometimes to a greater degree from stock than from autogenous vaccines. Phlegmons may develop as a result of the injection, but these readily respond to treatment and leave indurations behind. Usually one inoculation is sufficient.

The clinical results with this treatment are satisfactory, especially in protracted cases of gonorrhea, which show no tendency toward healing after two to three months. Cases of urethral infection do not respond as well as the uterine infections, and consequently local treatment is also necessary. Although as a rule local treatment, under certain circumstances in association with inoculation with killed fresh vaccine, is sufficient, the obstinate cases should be treated with living vaccine, which frequently produces surprising results.

A Probable Sign of Pregnancy.—C. J. Gauss (*Zentralblatt für Gynäkologie,* April 3, 1926) has noticed that during the early months of pregnancy the cervix uteri shows an abnormal mobility against the body of the uterus, so that the cervix can be moved laterally, anteriorly and posteriorly against the body of the uterus, without the latter taking part in the movement. This phenomenon is practically never found in the nonpregnant uterus, in which case when the cervix is moved to the left, right or posteriorly, the body always moves in the opposite direction.

The technic of the test is as follows: With bimanual palpation, the external hand pushes the uterus, which is in typical, slight anteversion flexion, against the vertebral column, while the extended index and third fingers of the other hand in the vagina grasp the cervix and push it alternately sagitally and transversely. The external hand can then feel whether the fundus of the uterus follows the movements of the other hand or not. In doing this test, one must be careful not to be confused by looseness of the mucosa on the cervix. This mobility is not confined to the mucosa of the cervix, but also affects the entire cervix up to the isthmial portion, between the anatomical internal orifice of the cervix and the histological internal orifice. This is called isthmial mobility of the uterus. There will be no confusion if the two fingers of the internal hand are carried well up into the fornix of the vagina. This sign is a modification of Hegar's sign and the author found it present in 146 out of 148 pregnancies within the first two months of pregnancy. It is comparatively rare in the nonpregnant uterus.

Etiology of Accidental Hemorrhage and Placental Infarction.—Francis J. Browne (*British Medical Journal,* April 17, 1926) has found that by setting up a chronic oxalate nephritis and then causing an acute exacerbation of the nephritis by introducing oxalates plus certain organisms, it is possible to produce in pregnant rabbits accidental hemorrhage, both external and concealed, and placental infarction. This method is successful in one hundred per cent. of cases. Hemorrhage could be produced, though less easily, by setting up an acute oxalate nephritis and then introducing organisms. A similar result could be obtained, also with less certainty, by producing an acute oxalate nephritis without subsequent introduction of organisms. A similar result can be obtained by setting up a chronic nephritis and afterwards introducing organisms. The latter first sets up an acute exacerbation, and hemorrhage occurs later.

In every case in which hemorrhage has so far been caused, an acute or subacute exacerbation of the nephritis, as indicated by a rise in the blood urea, has preceded the hemorrhage. The coliform group of organisms seems to be the most potent in producing the acute nephritis that predisposes to hemorrhage and infarction. An acute oxalate nephritis leads to a marked retention of urea, but even when the urea concentration in the blood is at its highest point no albumin may be present in the urine. It is important to bear this in mind before excluding nephritis in accidental hemorrhage.

These experiments show that nephritis, acute or chronic, is an important predisposing factor in the production of accidental hemorrhage and placental infarction, and that toxemia is the exciting cause. It is believed that organisms act only by setting up an acute exacerbation of the nephritis, and that they do not lead directly to the hemorrhage, the latter being caused by endogenous poisons held up in the circulation by the acutely damaged kidney.

Enucleation of the Ovum in Cæsarean Section.—C. Fournier (*Presse médicale,* April 3, 1926) recommends as routine procedure removal of the ovum intact, without rupture of the membranes, where labor has not yet set in. The operation should be performed as close as possible to term. The operating table should be horizontal. The uterus having been delivered through an incision eighteen centimetres long, the abdominal wall is in part held closed behind it with two hemostats which are crossed and fixed. Beginning at the top of the uterus a superficial median incision eighteen centimetres long is made in the organ with the tip of the scalpel. Three or four centimetres of this incision in its upper portion are then deepened cautiously with small strokes of the knife until the yellowish membranes are reached. The knife is now discarded, the left forefinger inserted between the uterine wall and membranes and the incision completed below and above with scissors. The intact ovum is next enucleated, both hands having been used in alternation to separate the sides of the ovum, as well as its lower pole, from the uterine wall. With slight pressure from below upward, the ovum emerges unbroken. Where the placenta is inserted anteriorly there is unusual bleeding as soon as the knife passes through the uterine wall. Under these conditions the hand is passed between the placenta and the uterus, whereupon the placenta emerges and the enucleation is conducted as before. An iodized compress is at once inserted into the cervix from above downward with long forceps. The intact ovum, carried to a table, is not ruptured for at least a minute, at which time the infant is ready for the first cry. During this interval, curiously, the placenta fails to bleed; there is continuous, spontaneous hemostasis, as if the infant continued to take all the blood from it; neither hemorrhage nor asphyxia is, therefore, to be feared. The procedure as a whole has the advantages of simplicity, cleanliness and neatness. It is aseptic, obviating the issue of amniotic fluid, which is sometimes contaminated or septic. The chief advantage, however, is that removal

of the membranes is facilitated. In the usual Cæsarean section, after extraction of the placenta there often remain débris of the placenta and especially of membranes on the lower segment. They are removed with a compress, but sometimes with difficulty, and some may remain. In the author's procedure, everything comes out with the intact ovum.

Vomiting of Pregnancy with Acetonemia.—Violet (*Presse médicale,* April 14, 1926) witnessed a case of severe vomiting in early pregnancy, accompanied by marked acetonemia. The embryo having died, previous to evacuation of the uterus the patient was given intensive alkaline treatment which brought about striking improvement and caused the severe abdominal pain and vomiting to disappear in a few hours.

Transperitoneal Cæsarean Section.—J. O. Polak (*Surgery, Gynecology and Obstetrics,* 42:4) describes an operative technic which, he asserts, has several advantages over the classical operation, though it cannot replace the Porro operation in infected cases. The technical points emphasized are: First, the low abdominal incision; second, the placing of the traction suture in the uterus at the upper limit of the abdominal incision which, when held taut, makes a perfect occlusion of the wound; third, the separation of the peritoneal flap, including the bladder; fourth, the delivery of the fetus by the head; fifth, the allowing of the placenta to separate spontaneously; sixth, the packing of the uterus with washed iodoform gauze to stimulate its contraction and retraction, this gauze being usually found in the vagina at the end of twenty-four hours; seventh, the complete occlusion of the uterine wound by the suture of the bladder reflexion over it which prevents the possibility of peritoneal leakage and intestinal adhesions.

Glycosuria and Pregnancy.—H. J. John (*Surgery, Ggnecology and Obstetrics,* 42:4) presents two cases showing the two contrasting findings in cases in which glycosuria is present in pregnancy. They show that the glycosuria in itself is but a symptom and is not of final diagnostic significance; but that it calls for further investigation. The first case required treatment for diabetes, while the second case did not require such treatment. On the one hand, to disregard the presence of sugar in the urine in such cases might mean that the patient would be deprived of a vitally needed protection; and on the other, to subject every such patient to the routine treatment for diabetes might mean a dietary restriction and a psychic strain which the patient could and should be spared.

Proliferative Gingivitis of Pregnancy.—S. Monash (*Surgery, Gynecology and Obstetrics,* 42:6) reports six cases in which tumorlike masses were observed forming on the gums of pregnant women. They began to form at a variable time during pregnancy, increased in size unless treated, and spontaneously diminished in size or disappeared completely after delivery. The growth, which attracts our attention because of its size, is not, as a rule, an isolated thing in these cases. It is usually accompanied by a generalized gingivitis and represents simply an exaggerated degree of this condition. The name proliferative gingivitis of pregnancy is proposed for all phases of the condition. This type of growth is inflammatory and should not be classed as a tumor. There is no gingivitis peculiar to and found only in pregnancy. A gingivitis practically identical with that described may be seen at times in men and in women who are not pregnant. Elimination of all irritating factors, and, if necessary, excision of the growth about a month or two after delivery, should constitute the treatment.

Pelvic Inflammatory Disease.—C. W. Hibbitt (*International Journal of Medicine and Surgery,* 39:4) recommends expectant and conservative management in acute and the majority of recurrent attacks in the therapy of this condition. Absolute rest is imperative, local external applications, enemata and sedatives give relief. Foreign proteins and actinic rays are worthy of trial. Surgical intervention is advisable in certain types and selected cases when serious manifestations are unduly persistent. The importance of ovarian conservation, especially in young women, cannot be overestimated. The important features here to be observed are: 1, Avoid damage to ovarian tissue; 2, relieve the ovary of complicating adhesions; 3, bring the ovary upward clear of adhesions and raw surfaces and keep it elevated; 4, preserve the ovarian blood supply.

Indications for Radiotherapy in Malignant Diseases of the Female Genitals.—Walter Fürst (*Schweizerische medizinische Wochenschrift,* April 10, 1926) differs in his views on the indications for radiotherapy by applying röentgenotherapy before resorting to surgical measures. In general, all malignant tumors are at first subjected to röntgenotherapy, and three weeks later their operability is determined at a laparotomy. In operable cases the extensive radical operation of Wertheim is carried out. If the histological examination of the specimen removed shows that the section was made in healthy tissue, the patients do not receive any more röntgen or radium irradiation. But if the operation was carried out in the midst of diseased tissue, secondary röntgen irradiation is given. The author has repeatedly observed cases of carcinoma which appeared to be inoperable on bimanual gynecological examination, but in which operation could be performed through healthy tissue after opening the abdomen. A suitable röntgen irradiation frequently acts remarkably well upon carcinomas in a purely symptomatic way; it reduces the size of the tumor and may even cause it to disappear entirely from the view in the speculum, and, furthermore, a preliminary irradiation eliminates the possibility of a subsequent postoperative peritonitis. After the biopsy, which is absolutely necessary for a definite diagnosis, immediate röntgen irradiation is added, and this in maximal doses. The operation should be done at least within three weeks after the preliminary irradiation. The latter should not be done on ambulant patients. With this technic the author reports some good results.

Blood Calcium in Eclampsia.—S. M. Feinberg and A. F. Lash (*Surgery, Gynecology and Obstetrics,* 42:2) find that though theoretically a decrease in the blood calcium may be expected in eclampsia, their research has proved unable to demonstrate any appreciable relation between the two. Determinations of blood calcium were made in cases of, 1, normal pregnancy, 2, preeclampsia and eclampsia, and 3, conditions simulating eclampsia. Although the figures for eclampsia were somewhat lower than those for normal pregnancy, the difference was negligible. Likewise, in several cases of pathological conditions simulating eclampsia clinically, the calcium figures were lower than those for eclampsia.

Corpus Luteum of Pregnancy.—D. Brannan and M. Cohen (*Surgery, Gynecology and Obstetrics,* 42:2) give two case histories which lead them to the conclusion that necrosis of the corpus luteum may occur in pernicious vomiting of pregnancy. It probably has the same significance here as necrosis of the liver and kidneys have in the same disease.

Psychic Disorders of Menstruation.—P. Bonifield (*International Journal of Medicine and Surgery,* 39:3) states that amenorrhea, menorrhagia and dysmenorrhea are frequently of purely psychic origin, and as such may for the most part be classed among the hysterias. Of the three, dysmenorrhea of psychic origin is by far the most common. The great majority of these cases, in fact, are of this nature. Because of over repression and under education of children on sex matters, menstruation, a primarily healthy physiological process, comes to be designated by the term "unwell." Often two or three reeducational conversations will bring about disappearance of pain. In other cases, where this simple form of treatment does not have the desired effect, if a psychological analysis be resorted to, and the unconscious conflicts on the phenomena of menstruation with their resulting tensions elucidated, the symptoms will be found to disappear entirely.

Fibromyomata of the Uterus.—F. A. Ford (*Surgery, Gynecology and Obstetrics,* 42:2) offers a comparative study of radiation and surgical treatment for this pathology, saying in conclusion:

In these unselected cases of fibromyomata of the uterus treated by operation and by radiotherapy, a relatively high percentage of the latter group has been found to require further treatment, either repeated radiation (eighteen per cent.) or operation (thirteen and seven tenths per cent.), as compared with four per cent. of the surgical group who received further treatment. It is true, however, that more recent cases, particularly after röntgenological treatment, are showing definitely better results through greater experience in the dose required. A study of individual cases shows so many thoroughly satisfactory results with radio-

therapy that the discrepancy in the total results must apparently be attributed to injudicious selection of cases, or to inadequate doses. Great care must be exercised to rule out malignant diseases at the time of radiation. Curettage should precede treatment in any case with suspicious symptoms. Inflammation, while apparently uninfluenced by radiation *per se*, as is shown by the lack of reaction to röntgen rays, is undoubtedly occasionally aggravated by the manipulation incident to the application of radium. Unusually hard fibromyomata containing extensive calcium deposits cannot be reduced satisfactorily by radiation; an incarcerated pelvic tumor is undoubtedly best removed surgically because of the inability to exclude adnexal disease. A röntgenogram may occasionally aid in detecting calcium deposits within a tumor.

The need of extreme care in excluding malignant disease is indicated by the fact that in six of the patients treated by radiotherapy a well established malignant process appeared within one year of the treatment. One other patient has probably malignant disease of the ovary, but refuses operation. Two others developed malignant disease within the two years after treatment, although in one case this may be considered a recurrence of the epithelioma in the abdominal wall at the time of radiation. In four patients, who remained free from symptoms for three years following treatment, malignant disease appeared. This may not be a higher percentage than that of pelvic malignant disease for all women at their age. However, it raises the question whether a focus of relatively devitalized tissue with altered blood supply may favor malignant change.

The Corpus Luteum.—C. G. Johnston and V. L. Gould (*Surgery, Gynecology and Obstetrics,* 42:2) concludes from their findings as follows.

1. Corpus luteum has been cited as the source of the hormone which produces hyperplasia of the genital tract and some authors maintain that extracts made by extracting corpus luteum with lipoid solvents are able to cause growth in the genital tract of certain mammals.

2. The amount of care exercised in collecting material is a factor which must be considered in order to be sure of the type of tissue obtained.

3. Using rats and rabbits we were unable to produce any noticeable changes in the genital tract by the injection of the alcohol, ether, acetone extract of carefully collected corpora lutea from pigs.

4. Pregnancy of the animals from which the corpora lutea were gathered, the size, consistency, or color of the corpora lutea had no effect on the results obtained.

5. Repeated positive tests have been obtained with the alcohol, ether, acetone extract of liquor folliculi of hog ovaries and in view of this are inclined to believe that the corpus luteum does not secrete the hormone which produces hyperplasia of the uterus and vagina.

Some Aspects of Ectopic Pregnancy.—C. S. Lane-Roberts (*Clinical Journal,* June 9, 1926) gives three main lines of treatment:

1, Expectant; 2, posterior colpotomy, and 3, abdominal section. These cases are often more or less confidently diagnosed as ectopic pregnancies, following abdominal pain, often some menstrual irregularity, vaginal hemorrhage, and the palpation of a definite pelvic or abdominal pelvic swelling. This swelling is limited, and of course there are no decided symptoms of continued internal hemorrhage. In other words, it is fairly certain that there is a pelvic hematocele, in all probability following an ectopic pregnancy, for which rest, with careful observation, may bring about absorption. If any evidence of relapse or of infection appears, more active treatment is indicated at once. The author considers such a line of treatment justifiable in some cases, for it may not be easy to have an abdominal section performed; the patient's own wishes may have to be studied, or she may be willing or prefer to lie up in bed for a considerable time. Apart from such circumstances it is probably best to have laparotomy done and the matter settled.

Some cases in this group definitely show a postuterine tumor due to hemorrhage, which may be treated by posterior colpotomy, with the verification of the diagnosis, and evacuation of the bloodclot and free blood, the cavity being packed, drained, and the plug changed daily. The vaginal incision closes only too easily, which should be prevented by the passage through of the gloved finger. Some cases are suitable for this treatment, though many appear later to discharge seropus for a considerable time, so that once more the abdominal route is generally preferred in most cases.

Definite hematocele cases will be treated by laparotomy—by far the most satisfactory method. By it the diagnosis is at once confirmed, any coexisting tubal ovarian or appendicular trouble dealt with at once, and any chance of relapse more satisfactorily dealt with.

On the whole, the results of cases of ectopic pregnancy treated by laparotomy are satisfactory, even if the patient is almost pulseless at the time. The interstitial ruptured ectopic pregnancy may complicate matters, as, owing to the situation of the vessels of supply, it may be necessary to do a subtotal hysterectomy in order to control the hemorrhage. Reinfusion of the mother's blood has been advocated in severe cases. The blood from the abdomen is scooped up in a cup, strained through double muslin, diluted with saline solution in a strength of three to two, and reinfused through the median basilic vein. But presentday opinion is against this method, though successful cases have been reported. The procedure takes much time and involves much shock, and the desperate cases are much the better for the least amount of handling. Again, such blood is defibrinated, and has no further value in inducing coagulation. Probably by leaving this defibrinated fluid blood undisturbed, it is absorbed quite rapidly from the peritoneum. The treatment of election for a bad case is immediate laparotomy, immediate hemostasis of the bleeding points, as rapid closure of the abdomen as possible, and if possible immediate whole blood transfusion from a suitable donor.

Treatment of Severe and Persistent Uterine Hemorrhage by Radium.—Sidney Forsdike (*British Medical Journal,* March 13, 1926) reports his favorable results in two hundred cases of a type of hemorrhage which is frequently described as idiopathic or essential hemorrhage, pathologically referred to as chronic metritis, fibrosis uteri, or chronic subinvolution. However debatable the pathology, the one distinctive feature is the excessive and uncontrollable hemorrhage with absence of any pelvic lesion to account for it. This series includes only those cases that have proved refractory to drugs and a single curettage.

Clinically, two types of uterus are met with in this condition—the systolic and the diastolic. The diagnosis must necessarily depend upon the result of an exploratory curettage, the exclusion of new growth, the absence of any other pelvic lesion which would induce hemorrhage, and upon the physical characters of the uterus as determined bimanually and by the curette.

Various methods have been described, namely, placing the radium in the uterus, vagina, and upon the abdominal wall. The latter method has been practically abandoned. Prolonged exposures in the vagina are fraught with the danger of fistula formation. The results from radium *in utero* are so constant and satisfactory as to place other methods which are open to criticism beyond the scope of clinical practice.

Anesthesia is required for an imperative exploration of the uterus, and the radium is introduced at the same time. In all cases dilatation of the cervix is done, and any tissue removed is referred for microscopic examination. The radium is screened in brass or lead and the tube is then surrounded with rubber tubing two to three mm. thick to exclude secondary rays. The bladder is maintained empty by a selfretaining catheter. The vagina is plugged with gauze soaked in liquid paraffin to keep the radium in place and to protect the rectum.

The dose must be individualized. The menopause cases were given 100 mg. of radium bromide for twenty-four hours and one exposure was found to be enough in 128 cases. Late recurrences occasionally were seen. Cases of fibroids were exposed for thirty hours, and a second treatment was rarely required. In young women smaller doses were used.

The symptoms during and following the exposure include pains, vomiting, fever, hemorrhage and leucorrhea. Painful micturition is frequently observed after the treatment.

The sole absolute contraindication to the use of radium in this condition is the presence of pelvic inflammation. Relative contraindications are patient bled white through loss of blood.

Chief among the causes of bleeding some months after the amenorrhea are septic foci, pyorrhea, etc.; cystic ovaries; pelvic inflammations; high blood pressure associated with contracted kidneys.

Psychogenesis of Leucorrhea.—W. von Arx (*Schweizerische medizinische Wochenschrift,* March 20, 1926) maintains that leucorrhea is a bodily physical symptom, the result of a purely functional transmission of a psychic conflict; at the same time it is also the transformation of a psychic conflict into the physical. It is a resistance reaction.

Much may be accomplished with psychoanalysis in these cases. The sexual life of these patients requires careful investigation. Frequently there is a history of coitus interruptus, ejaculatio precox, impotence, etc., in the male, which should and can often be corrected. A large number of these cases belong to the group of neurosis, which may show all grades and transitions from the lightest forms to the most severe, the compulsion neuroses and the fixed neuroses (psychoses).

Retroposition of the Uterus.—J. F. McGrath (*Surgery, Gynecology and Obstetrics,* 42:2) holds that congenital retroposition is rarely symptom productive and therefore it seldom requires treatment. Symptom productive retroposition of the uterus of the acquired type is most common among women who have been pregnant. Symptom productive retroposition will show on careful examination associated conditions, and the diagnosis will quite certainly be confirmed at operation. More efficient and extended postpartum observation and care will greatly lessen the incidence of acquired retroposition. The vaginal pessary when properly used is an instrument of undoubted value and should be more frequently used to promote proper postpartum involution. Any operation that carries with it the risk of intestinal obstruction or uterine dystocia should be condemned. The Simpson-Montgomery technic with proper care of associated defects offers the best prospect of cure. In a few selected cases the Baldy-Webster technic is superior.

Secretion of Colostrum in Pregnancy and Gynecological Diseases.—Ludwig Ballin (*Zentralblatt für Gynakologie,* January 30, 1926) reports that up to the fifth month of pregnancy the secretion of colostrum cannot be utilized as a diagnostic sign of pregnancy. Women, who have gone through abortions and births, especially those who have nursed babies for a long time, may show a breast that secretes either milk or colostrum for years (up to twenty-five per cent. in the author's cases). It was also found that inflammatory processes in the female genitals may produce lactation of the breast. Changes in the ovary, such as lead to its loss or diminution of function, especially in the climacterium, may likewise cause a pathological secretion in the breast. The secretion of the breast in spurious pregnancy during early years cannot definitely be attributed to aplasia or hypoplasia of the genitals or ovaries; in the later years, on the other hand, aside from the psychic condition of the patient, the changes that produce the climacterium in the ovaries, play some part.

The author recommends that the examination of the breast for pathological secretion should become a habit when determining the physical condition of female patients. Only then could it be possible to undertake investigations to determine whether the secretion of the female breast has any relationship with the internal, psychic and gynecological diseases.

The Effect of Thymus Extract Upon Uterine Activity and Its Practical Application in Obstetrics.—Nikolaus Temesváry (*Zentralblatt für Gynäkologie,* February 6, 1926) has administered several preparations of combined hypophyseal and thymus extract, which as a result of their hypophyseal effect upon contractions of the uterus and of their thymus effect, act specifically to relieve exhaustion, with great benefit in all cases in which it was properly applied. Its use is indicated less in miscarriages or premature births and during the puerperal period than during labors that are already in progress. In order to obtain a satisfactory effect true labor pains must be already present. No injurious effect either upon the mother or child was observed. The variation in blood pressure was no greater than after the use of pure hypophyseal extract. The mothers never complained of any symptoms and almost all the children were born without asphyxia.

The advantage of these preparations is that they are entirely harmless, which is not the case with hypophyseal extracts. With the author's preparation the act of labor was accelerated, and in contrast to the hypophyseal extracts, with which there frequently occurs a "secondary relaxation of the uterine musculature in the third stage of labor," the placenta was expelled shortly after the birth of the fetus through the continued action of the labor pains and the effect carried over into the third stage of labor. Postpartum hemorrhages were also not observed.

The contraindications for this preparation are the same as for the simple hypophyseal extract, and include a markedly contracted pelvis and disproportion between the size of the pelvis and that of the fetal head, transverse position of the fetus, false presentation of the advancing fetal part, fetal malformations, developmental anomalies of the uterus and vagina, the formation of a contraction ring, and diseases of the heart and kidneys.

Utility of the Erythrocyte Sedimentation Test in Gynecology.—O. Silzer (*Zentralblatt für Gynäkologie,* February 6, 1926) asserts that an operation for inflammatory adnexal tumors is indicated when the sedimentation time is less than ninety minutes. In the differential diagnosis between tubal pregnancy without severe hemorrhage and inflammatory tumors the erythrocyte sedimentation test is of value in a negative way, in so far as it may be said, with a fair certainty, that sedimentation values of less than fifty minutes speak in favor of adnexal diseases. In rare cases a differential diagnosis between an advanced pregnancy and a soft myoma of the uterus is possible with this test. In carcinoma, initial cases still show normal sedimentation periods, but in advanced cases there is a pathological acceleration of sedimentation in proportion to the severity of the disease. Benign tumors and noninflammatory diseases of the genitals show normal sedimentation periods.

Significance of the Erythrocyte Sedimentation Test in Gynecology.—G. Frommolt and L. Motiloff (*Zentralblatt für Gynäkologie,* February 6, 1926) believe that the erythrocyte sedimentation test is of value in the following gynecological conditions:

1. In clinically benign, noninflammatory tumors and in changes of position an acceleration of the sedimentation less than sixty minutes indicates the search for the cause of this acceleration. If it is not found in intercurrent diseases and if such exceptional causes as anemia, torsion of a pedicle and decubitus ulcer can be eliminated, one should be prepared for surprises at the operation.
2. In inflammatory diseases it is necessary to avoid an operation when the sedimentation reaction takes less than sixty minutes.
3. In the diagnosis of extrauterine pregnancy the absence of a correspondence between acute and recent beginning of the disease and the acceleration of the sedimentation is valuable except in tubal rupture with marked anemia.
4. In carcinoma the chief value of the sedimentation test lies in the early recognition of a recurrence through the reappearance of an accelerated sedimentation test. The accelerated sedimentation may be utilized in the diagnosis of carcinoma of the ovary in contrast to the past history.

MALIGNANT DISEASE

Use of Lead Colloids in the Treatment of Cancer.—Frank Coke and J. B. Cook (*British Medical Journal,* March 6, 1926) relate their experiences with a combination of lead with a very complex radicle of high molecular weight, containing mercury in the same proportion as the lead, but in a nonionized form, called "lead M.A.," the M denoting mercury and the A an amino group. The colloidal suspension if lead M.A. contains 0.1 per cent. of mercury and 0.1 per cent. of lead. Of three such preparations, this gives the best results and it was tried out in twenty inoperable cases. The results can be divided into four groups.

The first group comprises those patients on whom the lead did not appear to have made the slightest difference. In the second group temporary improvement was shown, as manifested by the patient's weight remaining stationary for many months or even gaining, a decrease in the size of the growth and the lymph glands. In the third group of two rather peculiar cases, the cancer seemed to abort, the whole of the growth apparently falling out. The fourth group comprises cases that were cured by means of both röntgenotherapy and the lead treatment, it being difficult to determine which form of treatment was the most effective.

During the treatment, full blood counts must be made in all cases, and stippled cells must be frequently sought for. Uranalysis is essential when giving full doses. Protein

shock has occurred occasionally a few hours after an injection. The injections may be made intramuscularly or intravenously.

In the series of cases reported the dose was on the whole small. There is a large margin of safety within which injections of lead can be increased in size and frequency before toxic symptoms from the lead need be expected. But the dosing in any particular case will depend upon a great many different factors. Patients of large weight with no cachexia will require large doses. Males will take larger doses than females. Emaciated patients and those with growths which have ulcerated to the surface will require small doses, at any rate to commence with. As any growth may abort, special care must be taken to make such abortion as aseptic as possible. In growths of the gut abortion must be particularly guarded against.

Arrangements have been made whereby a supply of lead M.A. will be available for general use.

Treatment of Malignant Disease with Lead.—W. Blair Bell, H. F. Woolfenden, W. R. Williams, L. Cunningham, S. B. Herd and J. G. Adami (*Lancet,* March 13, 1926), state that the treatment of 227 cancer patients was largely experimental and clinical and of a tentative nature, and that, as might be expected, the results were uneven and the failures and misfortunes many. They make no claims whatsoever in regard to the general curability of cancer by the use of lead.

The results of treatment of malignant growths with preparations of lead add further testimony in support of our views of the nature of malignant neoplasms. Much work remains to be done in regard to the discovery of a more therapeutically active preparation of lead, which is at the same time less toxic generally. All types of malignant growths are probably amenable to the beneficial influence of lead, provided the metal can reach the malignant cells in sufficient quantity. Adjuvant surgical and radiological measures in suitable circumstances may be employed with considerable advantage. When the growth has been partly, or apparently entirely, removed, intravenous injections of lead should be employed within a few days of the operation when possible. The method of treatment is difficult, and to some extent dangerous, and can only be safely employed by those who are thoroughly experienced in the work, and have laboratory facilities at their disposal.

J. G. Adami records the impressions left upon him by this series of cases as follows: 1. The healthy, the indeed almost florid appearance of the majority of the patients. There was complete absence of cachexia, and also any evidence of plumbic anemia. 2. Absence of wrist drop or other sign of lead poisoning; only one patient complained of some dimness of vision. 3. The rise in weight and good bodily condition of the majority, and, with this, their repeated testimony to the fact that they were now actively at work at their usual vocations. 4. The absence of evidence of recurrence. The problem evidently resolves itself into this: What is the dose of lead which will surely kill off all the cancer cells without inflicting too grave an injury upon the other tissues of the body? 5. The reduction of the mortality to sixty per cent. or even seventy per cent. is a material reduction upon, say, ninety-five per cent. Lead treatment is an important step forward in the direction of ultimate control of what is one of the gravest ills which inflict mankind.

The New Outlook on Cancer.—W. Cramer (*British Medical Journal,* January 30, 1926), states that in so far as Gye's conception of cancer is based on experimental work, it has to stand the test of experimental confirmation, but it has given us a new outlook on cancer. His conception explains that the aimless, lawless, irresistible growth is the result of a virus entering into a few cells and impelling them to grow, freed from the control and inhibition which regulate the growth of the normal cell. The cell with the virus nevertheless retains its biological character as a cell of the species, of the tissue, and of the individual to which it belongs; hence the limitation in transmission and the fact that the cells of a neoplasm breed true. The virus is common to the tumors of different species and classes of animals; hence the wide zoological distribution of the disease. The virus of itself is nonpathogenic; that explains why the disease is not contagious. The virus can only enter a cell if some accessory biological factor is present; such a condition can be induced by very different forms of chronic irritation; hence the local origin of the disease. We can also understand why agencies so different as tar, x rays, and animal parasites are capable of inducing cancer. Under exceptional conditions the parenchyma of a carcinoma may have such an effect on the cells of its stroma that the virus is able to infect the connective tissue cells and a sarcoma arises from a carcinoma. The cells of some very rapidly growing and highly malignant tumors produce in abundance a substance which will act as an accessory biological factor, but only for the same type of cell as the one of which the tumor is composed. Such a tumor can therefore be transmitted by a cell free filtrate containing both the virus and the specific factor. Other tumors contain less of this specific factor or it is more labile; they can therefore only be transmitted by living cells. There is therefore no fundamental distinction between these two type of neoplasms, as was hitherto supposed; they differ only in degree.

These differences in the amount of the specific factor present in different tumors affords an explanation of the variations in the clinical behavior of different neoplasms as regards rate of growth and malignancy. A tumor forming an abundance of the specific factor will grow rapidly and metastasize rapidly, because in such an extreme case the tumor will grow, not only by cell division, but also by a transformation of the normal cell of the same type. This would explain the fulminating growth of some types of cancer in the human subject. Tumors containing less of this specific factor or forming a less stable specific factor will grow more slowly and metastasize less rapidly. The striking fact that the growth of a neoplasm is independent of the nutrition of the animal in which it grows calls for an explanation which places the impulse to grow within the cancer cell. This is obviously in accord with the conception that the growth of a cancer cell is due to an intracellular virus assisted by a chemical factor elaborated by the tumor cells.

Gye's work raises many new problems, but it has solved our old and fundamental difficulties. Its particular merit is that it is not in conflict with any of the previously established facts, but, on the contrary, it confirms them. Taking them as his starting point, he has just gone one step further, and in doing so he has hit upon a conception which links together all our knowledge concerning cancer, which removes all the apparent contradictions, and which explains all the essential features of the disease. It is the first adequate explanation of the causation and growth of cancer, and it points the way to further progress.

Clinical Experiences with Carcinoma Antitoxin.—M. J. Scott (*Journal of Cancer,* January, 1926) draws the following conclusions from his clinical experience in the use of Glover's carcinoma antitoxin:

1. The antitoxin has a selective action for carcinoma, as frequently evidenced by the sensation of heat or slight pain, tingling, and sometimes by discoloration and swelling, in practically all carcinomatous tissue shortly following the subcutaneous, intramuscular or intravenous injection of the antitoxin.

2. In several instances, where tissue from lesions had been mircroscopically diagnosed as carcinomatous by competent pathologists, the author had the opportunity to make further microcopic examination after the administration of several treatments of antitoxin, and found instead of carcinomatous tissue, a broken down, degenerated tissue mass.

3. Shortly following the injection of antitoxin, any hemorrhage, foul smelling discharge and the pain resulting from the carcinoma, not that due to impingement of nerves by scar tissue, were considerably lessened in the majority of cases. In open lesions a discharge of serous fluid, sometimes tinged with more or less blood, followed in from one to several days.

4. Where the location of the size of the lesion had caused partial obstruction in any part of the alimentary tract, with accompanying symptoms—discomfort, pain, distention—relief from these conditions was usually obtained quickly; this even in cases with carcinomata too far advanced to expect complete recovery.

5. In cases where the administration of the antitoxin was followed by a rapid breaking down of the carcinoma and an absorption of this broken down tissue, patients often became toxic, developed a leucopenia and began to "lose ground" much as do similar cases after large doses of radiation. By suspending treatment temporarily, stimulating elimination, and adopting measures to correct the blood picture these patients were usually started "upgrade" again.

6. The administration of the antitoxin, more especially in advanced cases where large growths may be broken down too quickly, must be carefully regulated according to clinical results, laboratory tests and clinical experience.

7. Beyond a certain dose, which varies according to the location and the extent of the lesion and the patient's general condition, no increase in the amount of antitoxin administered, either by increasing the dose or by shortening the intervals between doses, is of any perceptible benefit to the patient, and in some cases may be a great detriment.

8. Each patient's general condition should be watched closely at all times and especially should complete urine and blood examinations be made frequently, though frequent examinations and manipulations of carcinomatous lesions should be avoided as they are harmful.

9. As in the treatment of any disease by any specific remedy, all other measures available that will assist the patient should be adopted—proper removal or destruction of cancerous mass when practical, and the adoption of such measures as will increase the patient's resistance and vitality.

10. In the more advanced cases with large primary growths or large metastatic masses we find that it is best to remove as much as possible of the masses by cautery (preferably) or surgery following radiation in suitable cases, and then treat any remaining invasions or metastases by the administration of antitoxin. This removal of the mass is done for three purposes: To avoid the necessity for the injection of the amount of antitoxin that would be required, or the necessity for the patient to produce sufficient antibodies, to break down the carcinomatous mass; to avoid the necessity for the system to absorb the broken-down tissue if not removed, and to avoid the protein poisoning of the patient, which would follow such absorption; and to avoid the overload that would be thrown on the kidneys and other organs of elimination if this mass were allowed to remain and be broken down and absorbed.

11. Treatment in a general hospital is better than outside of it, but only in a specialized institution can best results be expected.

12. When given early in the course of the carcinomatous infection, with patients whose general vitality and resistance are good and before the patient has absorbed much toxin, the chances for complete recovery are good; the lesions at first usually becoming slightly larger and much softer, then being gradually absorbed. Given later, when the lesion is more extensive and metastases are present and the patient is quite toxic, or in patients whose vitality and resistance have been lessened, but not destroyed by other causes, the chances for complete recovery are variable. When given still later, where general carcinomatosis is present or where an extreme amount of toxin has been absorbed, or with patients of very advanced years and low recuperative powers, or whose vitality and resistance have been greatly lessened by any other cause, the chances for complete recovery are extremely small, and little is to be expected beyond making the patient's conditions less intolerable.

13. There are marked differences in the degrees of virulence of the organism and also marked differences in the rsistance of different patients to the disease.

14. The antitoxin is not considered a "cancer cure," nor is it claimed to be such by Glover, but it is an entirely logical, and, in at least some instances, an effective treatment for carcinoma.

Endothermy in Carcinoma of the Tongue.—G A. Wyeth (*Annals of Surgery,* 83:5) says:

Our confidence in endothermy as a treatment for the removal of malignant lesions of the oral cavity, and our belief that better results will be achieved in the treatment of all neoplasms when endothermy is employed in the beginning in all those cases to which it is applicable, are based upon the record made by the method over a period of five years, a record made upon cases referred for treatment in many instances after surgery and physical measures—one or both—had failed. It is after careful consideration of the admirable results achieved by proper endothermic procedure that we affirm that endothermy should be given the preference in treating malignant lesions of the oral cavity. We enumerate the following explicit reasons for our belief:

1. By endothermy the extent of the destructive process is definitely under the control of the operator.

2. The effect of endothermy's destruction is immediate. The operator is not obliged to wait many weeks to determine just what has been accomplished by the forces he has set in motion.

3. Treatment by endothermy is followed by immediate cessation of pain. Sensory nerves are severed and capped.

4. This capping of nerves tends to eliminate surgical shock.

5. There is no postoperative reaction, and the patient is able to return immediately to normal diet.

6. There is no hemorrhage. The operator is spared the need of working in a field obscured by blood.

7. No other method offers endothermy's protection against the danger of recurrence and the threat of metastasis. The technic which isolates the malignancy, before its removal as dead tissue, by a path of protective destruction drawn in healthy tissue, and which thereby seals lymphatics to and from the affected part, is peculiar to endothermy.

8. Endothermy can be used in repeated treatments without prejudice to the patient. This is because lesion treated is destroyed and removed in a single operation without injury to surrounding tissue. The appearance of subsequent nodule or induration can be met with destruction and removal on precisely the same terms as the first lesion, if endothermy is the remedial agent.

For any and all of these reasons endothermy should be given the precedence in the treatment of cases of malignancy of the buccal surfaces.

Carcinoma of the Penis and Endothermy.—H. A. Kelly and G. E. Ward (*Surgery, Gynecology and Obstetrics,* 42:5) find that with proper technic (coagulation) the local lesion in carcinoma of the penis can be cured with endothermy. It is possible to eliminate a metastatic gland by incising the skin and exposing it and treating it with the strong bipolar coagulating current destroying the whole interior of the gland. This is an exceedingly important principle capable of a wide application in the treatment of lesions occurring in the abdomen, neck, and elsewhere in the body. For example, in intraabdominal malignancy with glandular metastases, it will be easy to insert the needle carrying a high frequency current and almost literally explode diseased glands out of existence, leaving the dead tissue to be absorbed *in situ.* This method of actually removing diseased lymphatic glands without long and tedious dissection with consequent danger to the patient is a tremendous adjunct to our surgical technic.

Cancer of Bladder Treated Two and One Half Years by Radium.—Reynard and Nogier (*Presse médicale,* April 14, 1926) report the case of a woman in whom radium had been used two and one half years previously for a histologically verified cancer of the bladder. This was followed by ten x ray exposures. Recovery is still maintained. The anterior wall, severely infiltrated at the time of the radium treatment, is now soft. A single deep x ray exposure caused a nodule which appeared in the anterior wall five months later to disappear. Cystoscopy hardly shows the area of implantation. The favorable results are ascribed to the exact apposition and perfect fixation of the radium during the treatment, and also to the use of highly penetrating x rays with long focal distance which permitted of the administration over the entire vesical mucosa of a considerable dose of the rays and of bringing the action of radium to completion over a larger area.

Technic of Use of Removable Radon Seeds in Carcinoma of the Tongue.—Joseph Muir (*Annals of Surgery,* May, 1926), describes in detail a new technic of radium therapy in lingual carcinoma which offers a practical means of irradiating even the most inaccessible tongue lesions. This is accomplished by the implantation of removable platinum radon seeds. As the methods of treatment heretofore used have always proved unsatisfactory, this article is of especial importance from a clinical view point.

The various methods by which lingual carcinoma has previously been treated are discussed and their advantages and drawbacks considered. Imbedding of bare tubes according to Janeway's method affords an even distribution of radiation, but causes necrosis which is invariably followed by sloughing and may even induce unavoidable, fatal hemorrhage. If screened seeds are used, necrosis is avoided, but they are objectionable because they must remain in the tongue as foreign bodies. The platinum needles advocated by Regaud also obviate necrosis and can be removed when radiation has been accomplished, but proper distribution of these applicators is difficult; they cause too much trauma; and above all, they are hard to immobilize and cannot be placed upon the posterior dorsal surface of the tongue.

The method offered in this article obviates all these difficulties, while retaining every desirable feature. The seeds

are completely screened with platinum, thus doing away with necrosis and sloughing; they are easily withdrawn after an adequate dose has been delivered, so that they do not remain in the tissue as foreign bodies. These seeds can be placd in any position required, just as readily in the hitherto inaccessible root of the tongue, as in more favorable positions. The article is profusely illustrated, demonstrating the exact method of approach to these inaccessible lesions.

The growth is first carefully palpated, and the number of seeds required determined according to its depth and surface extent. When a seed has been placed in the desired position, the attached thread is left protruding from the point of entry, where it is cut off so as to leave just enough to be readily grasped with forceps at the time of removal.

The entire treatment causes no pain, and but slight inconvenience to the patient; and when skillfully performed under proper aseptic precautions, the technic offers an excellent means of solving one of the most vexing of clinical problems.

Cancer of Paranasal Sinuses.—D. Quick (*Surgery, Gynecology and Obstetrics,* 42:4), emphasizes the following facts. Surgical exploration of the paranasal sinuses and biopsy should be resorted to earlier and more frequently so that earlier diagnosis of new growths may be made. With few exceptions, the principles applying to surgical removal of cancer in general cannot be carried out in dealing with growths in the paranasalsinuses. Radium and x rays are of value in treating this group of cases but, except in palliative procedures, must be used in conjunction with surgery. Radium and x rays may be depended upon to eradicate the tumor tissue if applied accurately and uniformly throughout the growth in sufficient doses. Surgery must be employed to provide exposure for radium application and adequate drainage. The anatomical relations of the parts are such that infection is a much greater menace here than in new growths in most other locations.

The Axilla in Cancer of the Breast.—I. E. Jennings (*Annals of Surgery,* 83:6) points out that in many cases of advanced cancer of the breast the skin of the axilla is found involved. In a smaller number of advancing cases early and low involvement can be detected. It is logical to suppose a microscopic invasion in comparatively early cases. It is the custom to ignore this fact and to plan incisions for the radical cure of cancer which invade, cross or dissect the skin and superficial fascia of the lower and middle axilla. The scars of such transaxillary incisions are frequently the site of local recurrence and it is fair to suppose that a wider dissemination of the disease has been favored by such an operation.

An operation is offered in which the skin incision surrounds the skin of the axilla and in which the axillary skin, fascia and glands are removed en bloc with the pectoral muscles and a wide area of deep fascia. The cicatrix of this operation does not limit the motion of the arm.

It is recognized as a general principle that attempts at radical surgery of cancer of the breast should be planned to completely surround the disease. This operation is offered as a more complete compliance with this demand.

Esophageal Carcinoma.—M. C. Myerson (*American Journal of Surgery,* 40:3) advocates the intubation of the esophagus after a sufficient space has been made for the placement of a tube. The technic is outlined as follows:

On the day before the operation the patient is given five or six yards of button hole twist "D" to swallow. After preliminary fluoroscopic and röntgenologic study, esophagoscopy is performed and a threaded bougie is passed to ascertain the exact upper limit of the constriction. This is of value later in ascertaining the proper placement of the silver tube. The Plummer bougies are now introduced over the string and the stricture is dilated. When the esophagoscope will no longer permit the passage through of the next larger bougie, the esophagoscope is withdrawn and dilation carried out with the string as the only guide. This is perfectly safe for by now a lumen permitting the passage of thirty F. bougie has been established. After dilatation to a forty-five F. measurement, the intubation tube is dropped into the esophagus either ahead of the esophagoscope or through it and it is implanted into the dilated area.

The patient is shortly after referred for fluoroscopic and röntgenological study to conform the proper placement of the tube.

The tube usually stays in place very well. It may become dislodged or the neoplasm may extend above or below its limits. In such a case esophagoscopy and proper adjustment of the tube becomes advisable. The tube does not seem to ulcerate. It seems rather to canalize the growth and is held in place by the infiltrative process. The possibility of splitting the esophagus is a remote one, and it is my feeling that bouginage, when done in the earlier stages and under esophagoscopic guidance, is quite safe. The tube becomes black but that does not seem to matter. Patients are advised to follow the semisolid food which they may swallow with small drinks of fluid.

These tubes may stay in place indefinitely, and are in no way uncomfortable to the patient. He can now sit at the table and eat as before. He needs no special nursing care, he has no postoperative wound, is out of the hospital at the end of forty-eight or seventy-two hours, and is still utilizing his natural passages for the ingestion of his food.

Bacterial Flora of Cancer of the Breast.—Stafford L. Warren (*American Journal of the Medical Sciences,* June, 1926) says that micrococci and diphtheroids have been cultured readily from cancer tissue obtained from seven human breasts, without obvious areas of infection. They also were present in a breast with chronic mastitis and in parts of a breast not involved by cancer.

It would appear that these organisms are casual inhabitants of the breast structures, and play no direct part in the production of cancer of the breast.

Observations on Cancer.—L. Frank (*International Journal of Medicine and Surgery,* 39:3) feels that all malignant neoplasms should be surgically removed as widely as possible where there are no definite contraindications. There are, of course, cases where radium may be used to advantage, and others in which the growth should be removed by the scalpel alone. In the cervix we have the ideal place for the treatment of malignancy with radium. However, in carcinoma of the lip, tongue and mouth where the glands are usually involved, it is probably a mistake to treat by radium without block dissection. Preoperative treatment of carcinoma for the purpose of blocking lymph drainage with either radium of the röntgen ray is of no value.

Somatic Origin of Malignant Disease.—C. R. Crowther (*British Medical Journal,* January 23, 1926) believes that malignancy is not a property of cancerous tumors, but a suicidal reaction of the body to an innocent hyperplasia. The reaction is suicidal because the hyperplastic cells are really a part of the body, and the specific poisons generated to destroy the tumor are almost equally poisonous to the body at large. Sarcoma probably differs in its nature from carcinoma; here the diseased process seems more complex, but the essential nature of malignancy is probably the same. It follows that if the body can be led to disregard the tumor the malignant process will stop, and the patient will be cured, save that the original hyperplasia will remain. It seems possible that this result may be achieved by blocking the afferent nerves of the part.

Radiodiathermy in the Treatment of Inoperable Malignant Disease of the Upper Air and Food Passages.—William Milligan (*British Medical Journal,* February 27, 1926) summarizes the advantages of diathermy as follows:

1. It is of definite value when ordinary surgical procedures are contraindicated. 2. It is followed by little, if any, shock. 3. With reasonable care it is a practically bloodless operation. 4. Besides sterilizing the tissues it blocks the vascular and lymphatic channels leading to and from the growth. 5. By so doing it tends to prevent dissemination of the cancer cell. 6. It affords relief from mechanical symptoms, such as obstruction and dyspnea. 7. It arrests the tendency to spontaneous hemorrhage. 8. It relieves pain. 9. The resulting scar tissue is soft and pliable and does not form adhesions. 10. Septic bronchopneumonia is less frequent than after severe cutting operations.

Its disadvantages are: 1. It destroys a certain area of healthy tissue around the original growth. 2. The walls of blood vessels in the immediate neighborhood of the growth may become softened and ulcerated, with resulting attacks of severe secondary hemorrhage. 3. When the skin is involved keloid cicatrices may develop.

The advantage of combining the application of radium with coagulation by diathermy is that the lymphatic area is thereby irradiated, wandering malignant cells are killed off, and the risk of subsequent metastasis is materially lessened.

The results obtained by radiodiathermy will repay all the trouble taken.

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Gregory Stragnell, M. D., *Editor*

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Medicolegal Notes.

OCCUPATIONAL DISEASES—ANILINE POISONING

In a claim by the employee of a fur dyeing company suffering from dermatitis, the claimant contended that he suffered from aniline poisoning, a disease provided for in the New York Workmen's Compensation Law, section 3, group 19, subd. 2, No. 8, if contracted while engaged in a process involving the use of aniline. It appeared that the claimant did not work in his employer's department where the workmen applied the aniline dyes to the furs, but handled and brushed dry furs after the process of dyeing was complete. It was held that claimant, not having been engaged in applying the dyes, was not within the coverage of the subdivision, and was not suffering from an occupational disease. Sokol v. Stein Fur Dyeing Co., 216 N. Y. S. 167.

CITY HOSPITAL EMPLOYEE INJURED ON HOSPITAL PREMISES HELD ENTITLED TO COMPENSATION

A nurse in a city hospital situated on an island owned by the city and occupied entirely by city institutions, after completing her work for the day, prepared to leave the island to go to the city. While on her way from the nurses' home, she fell on a sidewalk which was the proper passageway for her to take. The accident was due to the fact that snow had not been cleared off the walk. The New York Court of Appeals holds, Lynch v. City of New York, 252 N. Y., 115, 151 N. E., 159, that she was entitled to compensation under the Workmen's Compensation Law. Her employment did not cease when she left the hospital, but continued while she was on the island, leaving and returning thereto over the route provided by the employer for such purpose, the customary and practical way of ingress and egress; the employment exposing her to the hazards of the way in and out. This rule would not, of course, apply to all the sidewalks of a city over which city employees might pass on their way to and from their work.

TAKING X RAY PICTURE AND EXPLAINING IT NOT DIAGNOSIS

Section 107 of the Sanitary Code of the city of New York provides: "No person shall maintain, operate or conduct an x ray laboratory . . . wherein radiographs are taken, diagnoses made or human beings examined or treated by x rays, without a permit therefor issued by the Board of Health, or otherwise than in accordance with the terms of said permit and with the regulations of the said Board." Supplementary to this sction the board adopted a regulation providing: "Every x ray laboratory shall at all times be in charge and under the direction of a duly licensed physician or other person whose knowledge, experience and qualifications to operate and use an x ray machine are satisfactory to the Health Department." The New York Court of Appeals holds, Matter of Sausser v. Dept. of Health, 242 N. Y. 66, 150 N. E. 603, reversing 212 App. Div., 872, that the department may not arbitrarily reject the application of a concededly experienced and skilled x ray photographer for a limited permit to take radiographs, on the theory that he proposes to explain what the pictures show and consequently to diagnose and treat diseases. It is held that taking an x ray photograph and explaining what it shows do not constitute diagnosis or treatment. "It may be conceded," the court says, "that the reading of an x ray photograph would be a slight and necessary step in diagnosis and treatment, but it would fall far short of what we understand by those terms, which comprehend not only knowledge of a certain condition such as would be shown by the x ray photograph but, beyond that, medical or surgical consideration of what may have caused the condition presented to the eye and of the treatment which ought to be given to it."

INSUFFICIENT EVIDENCE FOR SUBMISSION TO JURY ON ISSUES OF NEGLIGENCE

In an action for malpractice when employed to attend the plaintiff for a fracture of the femur of the right leg, the questions on appeal were, the sufficiency of the evidence to require its submission to the jury on charges of negligence in diagnosis and treatment, especially in a failure to use x ray to aid diagnosis, and in burning the flesh of the leg by hot applications. The method of treatment was by Buck's extension. It was charged that the defendant failed to ascertain the exact location of the fracture. The Wyoming Supreme Court held, Wright v. Conway, 241 Pac., 369, that there was no substantial evidence to sustain this charge. On such a question, involving a highly specialized art, with respect to which a layman has no knowledge, the court and jury must depend on expert evidence, and in the absence of such evidence there is nothing to justify submitting the issue to the jury.

Evidence was also lacking to show that the extension as applied was in any way a proximate cause of the alleged failure to maintain apposition or the alleged resulting injury. Having correctly ascertained the location and nature of the fracture, an x ray picture for that purpose was held to be unnecessary.

Failure to secure a union of the bones during the period of treatment, or even longer had it been continued, would not alone, it was held, establish negligence, or even be a ground for an inference thereof, since a successful result is not guaranteed.

The failure to use an x ray has apparently never been held to be negligence when it did not directly appear that such an instrument was available, and it was held that the burden was on the plaintiff to show this.

As to the charge of burning plaintiff by hot applications, it did not appear that the defendant did more than to suggest or prescribe the hot applications. It was not shown that he applied them, or that he was present when they were applied. If applied by a nurse at the hospital, there was nothing to show that her relation to the defendant was such as to make him responsible for that action. She might have been employed by the plaintiff. Without further showing than that found in the testimony, the defendant would not be liable for the burns or blisters resulting from such hot applications. Judgment for the defendant was affirmed.

ANSWER TO HYPOTHETICAL QUESTION IGNORING EVIDENCE OF X RAY PLATES HELD INSUFFICIENT TO SUPPORT VERDICT

An employee sued his employer for compensation for an injury to his knee caused by striking it against a hard substance. His proof of the relation of the injury to his disability consisted of expert testimony, based on a hypothetical question, that he was suffering from synovitis caused by traumatism. The hypothetical question did not include the conditions disclosed by x ray plates made for the plaintiff one month after the accident. The plates were introduced in evidence by the defendant and showed bone growths in the knee joint of slow formation, resulting from organic processes and not from traumatism. According to testimony not rebutted, the disability was caused by the bone growths. The Kansas Supreme Court held, Kelsey v. Armour & Co., 241 Pac. 453, that the plaintiff's expert testimony was based on a hypothesis which ignored authentic evidence indispensable to a conclusion of value in determining the cause of plaintiff's disability, and was insufficient to sustain a verdict in his favor for permanent disability.

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A Few Instances of Nature's Cure of Gallstone Disease and the Occasional Necessity of Surgery to Complete It*

A Plea for Conservative Surgery

MAX EINHORN, M.D.
New York

Not long ago I briefly mentioned a case of gallstone disease (1), in which a diagnosis of the passage of a gallstone direct from the biliary passages into the duodenum, through perforation and previous plastic protective adhesions, could be made with certainty. This particular case resulted in a perfect cure. Similar events occur not infrequently and either pass unnoticed or are recognized later on by complications or in operative procedures on the gallbladder or gastrointestinal tract.

Nature's attempt at a cure need not always be successful. Perforation may occur before the protective adhesions have become sufficiently developed and an outpour of infected bile into the peritoneal cavity may take place. Even when the new communication between the gallbladder or the biliary ducts and the duodenum has been successfully established and one or more big stones have been emptied into the intestine, there are yet three important dangers for the future of the patient. One danger is the occurrence of pancreatitis due to pressure by the newly formed adhesions. Second, when dealing with big stones there is the possibility of ileus, the calculus causing obstruction in the lower parts of the ileum. As is well known, the lumen of the small intestine is usually a trifle smaller the nearer we get to the end of the ileum. The gallstone which has succeeded in passing through the jejunum and the upper ileum finds difficulty in moving on in the second half of the ileum and becomes firmly lodged in the lower portions of this part of the gut. Then we have the typical picture of ileus. There are instances on record in which even in these difficult situations—when everything looked almost desperate—a cure still took place, by the dislodgement of the calculus and its evacuation in the fecal matter. In most instances, however, surgery is called for and is usually successful, if a diagnosis is made in time.

The third danger is the occurrence of scarry contraction or distortion in the neighborhood of the perforated duodenum, which leads to grave disturbances in the emptying power of the stomach. This condition is quite common and usually recognized at laparotomy, seldom before.

In all three sequelæ mentioned surgery plays a vital part for the recovery of the patient.

I shall sketch briefly a few cases illustrating the three main complications.

ILEUS DUE TO BILIARY CALCULUS

CASE I.—June 8, 1924. K. P., female, single, fifty-five years old, had always been well until about two weeks ago, when obstinate constipation, eructations of gas, and occasional vomiting set in. On examination the liver was found considerably enlarged (almost a hand's breadth below the right costal margin) and hardened; at the same time being painful to pressure. The gallbladder could not be mapped out, but there was tenderness in the region where the gallbladder was supposed to lie. Enlarged veins were visible over the abdomen between the navel and the edge of the liver.

The patient was sent by me to the Lenox Hill Hospital, where she was in Dr. J. Kaufman's ward. The examinations of blood and urine revealed the presence of diabetes mellitus. The laboratory findings on June 13, 1924, were as follows:

Blood: red blood cells, 3,500,000; hemoglobin, 75 per cent.; leucocytes, 6,400; polymorphonuclears, 64 per cent.; lymphocytes, 36 per cent.

Blood chemistry: urea nitrogen, 17; uric acid, 2.1; creatinin, 1.7; sugar, 2.80.

Urine: albumin, +; sugar, 1.8 per cent.; casts, +; white blood cells, +.

On June 26, 1924, the x ray showed persistent deformity of first portion of duodenum, possibly due to extensive adhesions, although usually proved to be duodenal ulcer (Dr. Stewart). Stomach contents, HCl=32; T. A.=48; no blood. Patient was kept on a diabetic diet; reached 1600 calories without sugar or insulin. The patient was discharged on July 7th as improved.

On December 7, 1924, she was readmitted to the Lenox Hill Hospital; this time to the surgical division of Dr. H. Fischer.

History: The patient had never felt really strong or well since leaving the hospital six months before

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There were several attacks of abdominal pain, associated with vomiting, lasting several days. She had lost little in weight. For the past two days there had been continuous diffuse cramplike pains in the abdomen. Bowels did not move for two days. The patient vomited more than she took, the vomited matter being yellowish brown in color.

Status præsens (December 7, 1924, Dr. Meynen). Not much changed from previous examination. Dilated abdomen, veins still there, liver edge nine cm. below right costal margin. Tenderness in both lower quadrants.

December 12, 1924: Patient was seen by me at the hospital. The diagnosis was intestinal obstruction due to a malignant disease or to adhesions and operation advised.

December 14, 1924. Pain and vomiting persisted, later presenting fecal odor. No spontaneous bowel movement, although enemata were successful. X ray by Dr. Stewart.

December 15, 1924. Marked obstruction in small intestine, probably near cecum. Entire large intestine dilated; twenty-four hour gastric retention. Urine: albumin, +; sugar, 0; casts, +; white blood cells, 3+; casts, 2+; slight fever, 98.6° to 100.5°.

Operation was performed by Dr. Sauer, December 15, 1924. There was found hypertrophy of muscularis of small intestine with adhesions around gallbladder, to duodenum and to omentum. Gallstone of immense size was found in lower ileum causing obstruction. An enterotomy was done. The patient made an uneventful recovery. The stone (Fig. 1) weighed 15.85 gm.; circumference at widest part, 9 cm.; length, 45 cm.; consisted principally of cholesterin.

The great interest of this case lies in the fact that the large stone filling the gallbladder first caused swelling of the liver and pancreatitis with glycosuria. Then, after rupturing the gallbladder and perforating into the duodenum, there was relief from glycosuria, but later on when the stone moved down the ileum, which is narrower than the jejunum, symptoms of ileus developed and persisted. Enterotomy and removal of the stone brought perfect relief. It was wise of the surgeon to limit his work to the enterotomy and not to interfere with the gallbladder and its adhesions. Had he done more the patient's chances for recovery would have been bad. Conservative surgery saved the patient's life.

CHOLELITHIASIS AND SUBSEQUENT JAUNDICE DUE TO CHRONIC PANCREATITIS

Case II.—September, 1924. A. M., male, seventy-seven years old, complained of loss of appetite and yellow color of the skin for the past two months. He had lost about ten pounds in weight.

Previous history: For the last eighteen years the patient had had numerous attacks of severe upper abdominal pain on the right side, radiating to the back and up the shoulder blade, requiring hypodermic injections of morphine. The attack would last from six to ten hours and be followed by periods of freedom lasting six months to a year. Several of these attacks were accompanied by jaundice. The patient had been seen by me after one of those attacks with jaundice about fifteen years ago in consultation with Charles and Edward Ill. The duodenal contents were examined and the bile found turbid, containing numerous cholesterin crystals and a few pus cells. Inasmuch as the patient refused operative intervention and a sojourn to Carlsbad did him good, we decided to let him take the Muehlbrunnen waters at this resort. Each year, thereupon, this trip was undertaken with apparently good results, until the last period, when the jaundice developed without much pain and remained stationary.

Fig. 1.—Gallstone of K. P. (Case I) removed from the ileum by Dr. Sauer on September 26, 1924.

On September 19, 1924, his skin was icteric; chest organs intact. There was some tenderness over liver and gallbladder region; liver was swollen, extending three fingerbreadths below right costal border. Urine contained biliary pigments; no albumin, no sugar. Gastric contents: HCl +, acid=65. Duodenal bucket string test showed a blood stain corresponding to lesser curvature of stomach and bile discoloration below sixty-three cm. The duodenal contents examined in the fasting state on September 19 and 20, 1924, showed:

September 19, 1924: Dark yellow, turbid, alk.=20; numerous blackish particles, some stony hard (calcium bilirubin crystals), mucus. After five per cent. peptone, 60 c. c., a trace of color reaction, beginning at ten minutes and ending at fourteen minutes (amount 10 c. c.). Total twenty minutes=30 c. c. A=3; S=1; T=2.

September 22, 1924: Dark yellow, brown, very turbid; calcium bilirubin crystals); few cholesterin crystals; mucus. A=5; S=1; T=1. After twenty-five per cent. glucose (60 c. c.) no color reaction. Digestive test capsule recovered after thirty-six hours: potato, fat, thymus and some nuclei present.

The Graham test done with sodiotetraiodo (1.5 gm.) given through the duodenal tube did not give any gallbladder shadow. The diagnosis of gallstone colic having been made long ago, it was thought that there would be a cystic duct occlusion by a stone and partial occlusion of the choledochus either by stone or by a pancreatitis.

An operation was advised and performed by Dr. Edward Ill on September 26, 1924. When the abdomen was opened it was found that there was no gallbladder, the latter having been destroyed and replaced by dense adhesions. The pancreas was found enlarged and its head compressing the choledochus. The originally planned operation of cholecystgastrostomy could not be carried out as there was no gallbladder. A tube was then inserted in the vestige of the former gallbladder and biliary drainage established this way. Patient made a good recovery. The drainage was kept up for quite a while (about two months) and the jaundice had disappeared completely. In this patient the stones must have perforated and destroyed the gallbladder. The dense adhesions may have led to pancreatitis which by compression caused the jaundice. The biliary drainage relieved the ten-

sion and brought relief to the pancreas. The patient has enjoyed good health ever since and is now nearing his seventy-ninth year in good physical condition.

Here, as in Case I, conservative surgery saved the patient's life. Any more extensive interference would have certainly proved fatal.

HYPERCHLORHYDRIA AND CHRONIC CHOLECYSTITIS WITH BEGINNING PYLORIC OBSTRUCTION DUE TO AN ULCER NEAR THE PYLORUS

CASE III.—May 30, 1918. V. F., male, about fifty-six years old, was troubled for four or five years with recurrent attacks of pain two hours after meals, lasting several weeks, with periods of intermission lasting six to eight months. Treatment with alkalies brought relief for some time.

In May, 1919, the patient was again troubled, principally with gastric distress two or three hours after meals, accompanied by heart burn and severe constipation. The examination showed gastric contents: HCl +; Ac.=60. The duodenal bucket string test showed a blood stain about twenty-one inches from the lips, and bile below twenty-three. The duodenal contents examined on June 1st, in the fasting condition, revealed bile turbid containing numerous cholesterin crystals. The diagnosis was ulcer near the pylorus and chronic cholecystitis.

As the patient was suffering a great deal with vomiting, it was decided to operate. Dr. Willy Meyer concurred in the diagnosis and advice. When the abdomen was opened the pylorus was found adherent to the gallbladder, the latter being imbedded in dense adhesions. These were probably caused by the passage of stones and the protective influence of Nature. It was deemed unwise to attempt a cholecystectomy under these conditions. A gastroenterostomy was then done and the gallbladder with its adhesions left alone. The patient made a rapid recovery and has remained well ever since.

REMARKS

In going over the three cases described above we notice that they all presented gallbladder lesions, which Nature tried to remedy by removing calculi through a perforation after forming dense adhesions over gallbladder and duodenum. In these cases later on secondary disturbances developed which required surgical aid. In the first there was a severe ileus; in the second, a chronic pancreatitis with jaundice; and in the third, partial pyloric obstruction due to adhesions. At the laparotomy the question was whether anything should be done with the gallbladder itself, the original seat of the troubles, causing the secondary lesions. It was decided to do only what was absolutely necessary to remove the dangerous complication and leave everything else untouched. It was believed that Nature's protective walls should not be interfered with excepting when absolutely necessary. This policy proved correct, for all three patients became entirely well.

In a number of other instances of a similar type, in which an attempt was made to remove all adhesions and to reestablish more normal conditions along the gallbladder and stomach (doing, for instance, a gallbladder plastic operation and a gastroenterostomy at the same time) there was frequently a fatal issue.

The keynote of this paper, in which I have selected three cases as illustrations of a greater number of similar instances, is: Do only the surgery that is absolutely essential for the life of the patient, and do not bother with anything else, or *do conservative surgery.*

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The Ultimate Treatment of a Radical Mastoid Operation

GEORGE B. McAULIFFE, M.D.
New York

Case I.—J. L., aged twenty-two, had a radical mastoid operation done six years ago for an otorrhea which had existed for nineteen years. It had never healed. It was never washed. He had treatment of various sorts—powders and for a time instillations of a few drops of ether daily. His ear was filled with crusts and detritus and he had been told that it would never get better.

The ear was syringed thoroughly, dried and filled with ether. This treatment was carried out twice a day. After a week instead of ether, mercurochrome in fifty per cent alcohol (five per cent solution) was instilled after syringing. The cavity now began to look better. Dried casts of various parts were taken away. At present he is syringing with boric acid twice a day followed by instillations of five per cent mercurochrome and insufflation of boric acid powder to act as a sponge for residual moisture. Raw granulations have been touched up with twenty per cent nitrate of silver. He has been seen once or twice a week for two months. At present the cavity presents a shiny epidermis in all situations except a small spot below. The ear gives him no concern now although he has absolute conduction deafness.

Case II.—Mrs. P., aged thirty-seven, had had otorrhea off and on since she was fourteen years old. After her first child was born the right ear ran for a long while. After the birth of her second child it began again. She had some mastoid pain and dizziness. A radical operation was done five years ago. The discharge did not cease. It was treated constantly. The same injunctions about moisture had been given. She became quite despondent. I saw her three weeks ago and instituted the same line of treatment detailed above in Case I. There was nothing remarkable about the measures I advised except thorough cleansing and sterilization and absorption of residual moisture. At present her ear gives her no trouble. She has two spots which are not covered and some granulation tissue behind and in front of

the fragment of posterior wall. I look forward to a good result. I may be too sanguine but at least she feels better than she has in five years.

Case III.—Mrs. B., seen in November, 1924. The right ear began discharging sixteen years ago and was treated. In November, 1903, a radical mastoid was done. After operation there had been no discharge and hearing was good. No skin grafts had been employed. In February, 1904, she had fainting spells, dizziness and a swollen face. Another operation was done. In April a third operation was performed. The ear was then apparently healed. Six weeks ago, she began to feel as if the ear was packed. She had tinnitus and the hearing began to fail. The left ear began discharging twelve years ago. On September 1, 1903, the radical mastoid operation was done. The ear did not heal. Shortly afterwards a second operation was done. Six weeks ago the same feeling of a packing with tinnitus came on. Both ears healed with a tight skin. The hearing in the left was now better than in the right. The left ear had been grafted.

In 1910 the hearing was poor—about equal in both ears. The acoumeter was heard about two inches. The right ear was moist. Tinnitus annoyed her.

In 1917, when her head was low she became dizzy. The dizziness lasted for some time. When last seen she was troubled with tinnitus and vertigo when in bed. It was increasing in intensity. Both ears were healed. Her hearing was poor, and the tinnitus and vertigo were increasing. I followed this case for thirteen years and while the operative work was successful after three attempts on the right side with no grafting and two procedures on the left with grafts from the thigh, the end results of function were distressing.

I cite these few cases as examples of many radical mastoid operations which have come under my observation. They naturally awakened the inquiry, "Why are these patients not entirely free from aural disturbance after having undergone an operation not only severe but apparently useless, except in the particular that they are free from the danger of intracranial complications?" If the patient was aware of the facts that in many instances no cure of the discharge would be guaranteed; that hearing would not be conserved; that even if after the ears had apparently healed relapses were apt to occur, would they readily assent to such an operation except in these instances where an immediate operation was necessary to prevent intracranial sequelæ? How many of the radical mastoids fall under the last caption? Very few. There is no doubt that there are fewer "radicals" done at present than a decade ago. Proper treatment of the aural discharge, improved methods of conservative medication, the widespread propaganda of the danger of infected ears, all have contributed to the prevention of conditions that are within the danger zone.

I am reminded of the observations of Dr. E. J. Gill, in the *Southern Medical Journal,* who states that "inexperienced aurists who are not indifferent to the delicate anatomy of the ear do the operation; that cases are not carefully selected; that useful hearing is often destroyed and that the postoperative care is neglected." Aurists would rather operate than treat. A certain number of ears must be operated on radically to round out their experience or quiet their *furor operativus.* J. Foster in the same journal states that thousands of radical mastoid operations are done which could have been cured by conservative treatment and adds that not so many are done now." He states also that "recurrence comes from infection from the Eustachian tube or from rapid exfoliation of new and poorly nourished epithelium, and patients should be seen from time to time for two or three years." How many get this postoperative advice. Very few, judging from cases that are seen.

Andrews, in commenting on these statements, states that the poor results are due to insufficient flaps and too small a meatal opening and he also advises that patients should not be dismissed until shiny epithelium shows; that moisture should be avoided. I feel that the last injunction is misinterpreted. In endeavoring to avoid moisture cleanliness is interdicted. So we find, especially in children and in many adults, ears filled with dirt, wax and pus all interacting on one another. It seems almost an argument against focal infection to see the apparent tolerance of masses of septic detritus lying in contact with a raw surface in what is practically a pocket. What a commentary on aural surgery! Does the fault lie with the patient or with the aurist? Surely not in the majority of cases with the patient, because he is ignorant. If he is not stolid he seeks relief from the condition and passes from one to another aurist often without relief. Many are told that their condition can not be cured. They are instructed not to syringe their ears because moisture is bad for them. So they accept the condition—perhaps worse than the original one—with a resignation truly remarkable.

My contention is not that the radical mastoid operation is unnecessary but that in many instances it can be avoided. The patient should have a square deal. If the operation is done for the purpose of preventing intracranial sequelæ it is absolutely the only surgical method of accomplishing it. But the patient should be informed that the treatment does not cease a month after the operation; that it may be necessary to look after the ear for years. If the operation is done for the cure of a chronic otorrhea no promise should be held out for a permanent cure. No promise should be made that the hearing will improve. The operation will give him practically a dead ear in the majority of cases. Furthermore, that the surgeon should feel the necessity of a rigid follow-up procedure until the patient is as well as the operator can make him. He should not throw the case after doing the operation into the scrap heap of experience.

There is still too much *ipse dixit* in medicine and Aristotelian obedience does not make progress. Ears that are foul should be cleansed. If squamous epithelium cannot stand this it is surely not worth much as protection. I believe that the recurrences of the discharge are due to sepsis more than mere moisture. Therefore mild antisepsis with due regard to the integrity of the epithelium covering will preserve rather than destroy the epithelium. Drying the cavity can be easily done and the old practice of boric acid insufflations, provided the patient or the ear shows no intolerance to the drug, will care for the residual moisture and serve to exclude possible external aerial infections. It is a difficult matter to convert a mucous cavity into an invaginated skin cavity.

It may seem that the views stated above are very pessimistic, but I am only stating what I see. It is a distinct surprise to me to see a perfect radical mastoid operation. I know there are many. If the operation fulfilled the indications, there would not be so many modified radical operations advocated. This acknowledges the weak points of the procedure. We have yet to see a better mode of attacking the disease—one that will not practically destroy the end organ of audition: one that will give a better cosmetic effect: one that will not leave the patient with an open cavity subject to every external insult. The principle of the operation is correct. The method is open to many objections some of which I have alluded to perhaps too strongly but my opinions are only the result of my observations on the old radicals of which nothing is ever heard. Therefore, the ultimate treatment should interest those who lightly decide on this procedure for the cure of a chronic discharge which may never eventuate in intracranial complications.

26 West Eighty-seventh Street.

The Chemical Aspects of Life and Disease*

ELLICE McDONALD, M.D.

Philadelphia

It is with some diffidence that I come to speak before this society of accomplished chemists, because I have a full realization of my shortcomings as a chemist. I have had to learn my chemistry in the last few years, and the job is still far from being well done. However, my excuse is my keen desire to gain the help of chemists in our study and turn the minds of chemists toward the colloid problem of life and the modification of normal life into the deviation of disease. Life is the continuance of colloidal reactions in an aqueous medium and research into these vital processes is essentially a chemical colloid problem. In learning to think of life in terms of colloid cell changes, I have come to think of vital problems and their deviation in disease in a language but poorly understood by my fellow doctors and yet I am not sufficiently informed to discuss these chemical problems on a full basis of equality with chemists, so that I am like the coffin of Mohamet, suspended between the earth of medicine and the heaven of chemistry, hoping that some day I shall be translated to that paradise where I can understand the application of the De-Bye-Hückel equation to the processes of the protoplasmic cell.

It is peculiarly appropriate that I should appear before you, incomplete though my contributions may be, because it was the chairman of your programme committee, Dr. J. B. Hill, to whom I turned for chemical help several years ago and whose direction as to the literature and workers was the beginning of our study into the colloid forces of life. And this is my way of giving thanks to him and to you. I shall speak frequently of our investigations into life and disease, and, when I use the editorial "we," you will please understand that I do not mean myself alone, but this must include my collaborators, chief of whom are Dr. S. D. Ludlum, Professor of Psychiatry; Dr. Elton Mayo, Rockefeller Fellow in Psychopathology; Dr. Josephine Gleason, Assistant Professor of Psychology in Vassar College; Dr. W. G. Karr, Assistant Professor of Biochemistry; Dr. Andrew Godfrey, Surgeon to the Chestnut Hill Hospital; Dr. W. Seifriz, Assistant Professor of Botany; Dr. Crowder of the Department of Clinical Pathology; Drs. Reinhold, Blodgett and Saylor, chemists, as well as others. In addition we have had help and assistance from True, the botanist; Langmuir, the chemist; Ralph Lillie, the biologist; Mansfield Clark, the chemist; Clowes, the biochemist; Donnan, the colloid chemist; Stockard, the embryologist, and many others to whom I once more take this opportunity for giving thanks.

Our study is incomplete; this is the beginning, not the end of experiment, but I welcome this opportunity to bring it before you because we want your help and to have your minds preoccupied with this problem so that the knowledge of life may be advanced. So many abstruse chemical problems arise upon which we need advice and assistance, and we find it is easier to inform a chemist into the biological processes than it is to instruct a medical man in colloidal chemistry. The medical man has been interested in end results, and there has been no thread of reason running through the study of medicine as the atomic theory does through chemistry. The medical man thinks in terms of the pneumococcus and the consolidation of lobar pneumonia, without considering the intervening processes. It is as if chemists knew nothing of the atomic theory and considered the reaction of oil of vitriol with copperas as to form new end results. The late Sir James Mackenzie, the heart specialist, who left the largest and most lucrative consultation practice in London to study life and disease in the obscure little town of St. Andrews, and there founded and supported an institute, said in the last letter he ever wrote, "For years I had been gradually becoming convinced that the whole tendency of medical research was on wrong lines; it was devoid of fundamental principles, was haphazard and could not supply the kind of knowledge which would enable us to solve medical problems . . . I saw that there was undoubtedly a great fundamental principle, which, if discovered, would do for medicine what the atomic theory has done for chemistry." This letter was published after Mackenzie's death and he was unable to complete his research. It is for this fundamental principle that we search, and it must consist in the application of the atomic theory to vital processes and it is for this that we bring our unfinished work before you and ask your help as chemists. And in relating this study, you will realize that many things must be stated broadly and

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generally, and so make allowances for certain lack of detail in statement due to the shortness of the time and the necessity to review all the processes of life in one hour.

The most interesting thing in the world is the contemplation of life. The human animal is busy about his own affairs and interested in his own organization and its relation to the world. So, in regard to the study of life, it is with the human system or organization that our chief interest resides. Man, being a vertebrate, has most of the mechanism of his body organization in common with other vertebrates; but a part of this mechanism is more highly developed in him and this particularly applies to the specialized character of his two nervous systems, but this is a difference only in degree. Jacques Loeb has defined organisms as chemical machines, consisting of colloid material capable of growing and automatically reproducing themselves.

The application of this definition to the human animal shows that it is correct within limits, but falls short of many functions and activities of man in the varied phases of his life's career. Growth and reproduction are but two of his activities and the definition must be elaborated to include nervous action and control (voluntary and involuntary) maintenance and indeed decay or age.

There are four principles in the study of man's life which are fundamental and which have not been much considered: *1, the application of the energy of life from atoms; 2, the colloidal structure of protoplasm or body stuff; 3, the control exercised over the relation and processes of the first two factors by a special group of cells, mainly localized in the involuntary nervous system and 4, the effect upon his body processes of man's particular and peculiar psychic power of mentality and emotion which he has more highly developed than the other vertebrates.* To attempt to explain the process of man's life, these four factors (at least) must be considered and they are so interlocking and mutually influencing that, unless they are considered, any research in man's life, whether of the proper mechanism (health) or its deviation (disease and age) will be without fundamental principles.

The processes of life have to do with the living: death is inarticulate and unresponsive. The real concern of man is with life and the processes of life; his physical and mental activity are associated with the movement of living matter as distinguished from nonliving matter. Living matter exists in definite ordered arrangements or schemes and not in a diffuse, unorganized or formless state. Characteristic of the association of life is the ordered or planned arrangement carried out to the most minute detail and this plan or order is absent in nonliving protoplasm—there the scheme is not complete, systematized nor arranged.

But in living organs, certain cells frequently control other cells as to their activity and energy functions. The cell is never at rest, always discharging or renewing energy, never grows old so long as the blood supply is good, never gets tired while its nutrition is supplied. Every living cell is a practical organic and physical chemist, conducting analytic and synthetic processes of the most complicated order. But its activities are dependent upon other cells. In certain cells the power of control is more highly developed, as in the nervous system whose function is the control of protoplasmic energy from a distance.

Life is the result of the reaction of energy and protoplasm, and protoplasm is an apparatus for transforming energy. These processes are dependent upon chemical activity, but they are not governed by the rules of a simple chemical system. In vital activities, the processes are based upon colloid structure, and mechanism is therefore as important as chemical reaction. Protoplasm which is the basis of life is a colloid and the unit of protoplasm is the cell.

Protoplasm, although it consists largely of substances which are soluble or suspended in water, nevertheless maintains itself within the body in a watery medium. This is due to the fact that protoplasm exists mainly in units, called cells; and the protoplasmic cell is not miscible with water on account of its differentiated outer layer or cell wall and is maintained intact so long as the cell boundary protects its integrity. This membrane is semipermeable (only certain selected substances can pass through) and protects the interior from dissolution and disintegration by the water. So that this house of our body is made up of cells as bricks, but these bricks have each a protecting film which allow certain things to pass in and out and maintains the bricks intact. The durability and continuance of this film depends, not only upon the environing medium (the water part of our bodies), but also upon the specific constitution of the protoplasm, so that the cells of different quality or kind of protoplasm have cell boundaries of a different character.

The degree of chemical complexity in material on earth is definitely fixed by temperature. Project your minds backward to the high temperatures of the beginning of the formation of this earth when only such forms of matter as we term elements could remain in equilibrium, and probably many of them were decomposing as radium is today. At a somewhat lower temperature, binary compounds such as oxides could remain in stable equilibrium. Still lower in the temperature scale, saline compounds of the halogens and of neutralized acidic and basic oxides can stand the heat and finally the carbonates of the alkaline earths in a labile equilibrium according to pressures of carbon dioxide. But it is only at a much lower temperature that compounds complicated in structure can exist in equilibrium and, for compounds necessary to life, the temperature range is very limited. As soon as the temperature will admit of carbonate formation, the carbonates come into existence. When equilibrium conditions admit of it, matter of its own properties tends where energy is available to take on complex forms with cooling. Next in order of evolution were the inorganic colloids. The unit now passes from the atom to the molecule and complexes of molecules form colloids with alteration in temperature, and instead of single atoms forming single, simple molecules, molecules behave as atoms and units with a new order of affiliation to form colloid molecules. With increasing complexity of structure, the equilibrium of the colloidal aggregates approximate more and more to the labile, easily destroyed and readily reconstructive arrangement characteristic of life. This is the transition of

the inorganic colloid to the living colloid of the cell structure. The discovery that inorganic colloids are capable of absorbing external energy forms and so building up complexity, will yield a new outlook on life and bridge the gap between the inorganic and organic, between the nonvital and vital forms of matter.

Graham, the father of colloid chemistry, spoke of colloids as a dynamic form of matter and of crystalloids as a static form. But now chemistry is being translated in terms of free energy and the gap between the salt and cell is being markedly lessened. So we find living organisms exist as a number of exceedingly complicated colloid structures, the origin of which can be traced directly or indirectly to the energy of sunshine and fashioned into chemical energy in organic colloid bodies of which the unit is the cell. In addition, life has a very limited range of p.H. The plasma of the human blood can not vary more than from p.H. 7. to p.H. 7.9. At the higher p.H. the tendency is for the bicarbonates to turn to carbonates from the use of carbon dioxide utilizable for carbon fixation. In synthesis, there is a tendency toward alkalinity and the change from bicarbonates through carbonates to hydrates of the chief cations.

In living organisms, the cell is the simplest unit capable of continuous life. In the human being, it is a complete and autonomous unit, capable of vital reactions and changes and, by these, influences profoundly the chemical activity of the cellularly organized body. In typical living cells, the external protoplasmic layer has all the properties of a semipermeable membrane which is impermeable, or permeable with difficulty to the water soluble substances of low molecular weight, present in the protoplasm or its surroundings, but it is freely permeable to water. The protoplasmic cell can thus preserve a chemical composition different from that of the surroundings without interference which would result from a free or unrestricted diffusion or interchange. The chemical composition and crystalloidal content of the cell are widely different from that of the surrounding medium.

In the human body, the aqueous medium (the watery blood and tissue juices) has much more sodium than has the interior of the cell within the cell boundary. The other salts of potassium, calcium and magnesium (which with sodium make up the important salts of the body) are in different proportion within and without the cell (in the cell interior and in the plasma of the blood). The salts of the blood plasma are the salts of the ocean, but not the salts of our present ocean which is considerably more alkaline. The plasma salts are in the proportion of the salts of a primeval ocean, and this has suggested to A. B. Macallum that the circulatory fluid of man is a reproduction of proportions of the Archean Ocean of late pre-Cambrian or early Cambrian times. The cell is older than the blood plasma because it first existed at large in the primeval sea as a single particle in salty water and unenclosed. The cell became a closed system earlier than the closure of the blood system and finally became surrounded by an envelope (as in the circulatory system) taking with it the composition of the sea water of that time; the cell migrated, so to speak, from the primeval ocean and carried with it its own small sea, confined within boundaries, so that it continues to have the aqueous medium it requires.

Geologically speaking, the cell is, therefore, older in evolution than the blood plasma in which it exists. The cell is pre-Cambrian and the blood is late pre-Cambrian, or early Cambrian. So for these billion years, the cell and its liquid phase (the blood plasma) have been existing with different salt content, the salts in the interior constantly striving to get out and the salts of the exterior constantly trying to get in; in their struggle the ions produce electron interchange and potential differences across the cell boundary. Their heredity is the sum of the environmental processes. The colloids are amphoteric (neutral or without potential) but the addition of crystalloids by producing the attraction of ions to the surface or away from the surfaces produce potential differences. It is for this reason, that the salts of the body, although amounting to less than two per cent. of the body weight, are of such supreme importance. Colloids have to be vitalized by crystalloids before they become potentially active. The human vitality depends upon the stimulation of the colloids by inorganic salts for the continuation of life processes and alteration in these salts, within and without the cell, produces alteration in protoplasmic action which is dependent upon the resultant change in the structure of the colloid with alteration in structure, osmosis, surface tension, viscosity and potential difference. It may be taken as an axiom that a constant bioelectric variation is associated with every constant life or physiological process, and the change in bioelectric variation depends upon potential difference change from the inorganic salts.

The protoplasmic cell is relatively acid in relation to the blood plasma or serum. The cell is usually upon the acid side of neutrality and the blood plasma is considerably upon the alkaline side. There is then an acid or less alkaline colloid cell, surrounded by a more alkaline aqueous colloid medium (the blood) with a cell membrane or boundary interposed. An ideal arrangement is thus made for the production of potential differences (electrical inequality) and membrane equilibrium. The bioelectric variation thus is capable of easy and facile changes and electron transfer produces such vital processes as oxidation-reduction, peptization, coagulation and all the varied processes of life. The action of the forces then can be crudely represented in the following scheme:

nucleus, electron	cation, anion	electrolyte, water	protoplasmic action or vital processes.
nucleus, electron	colloid, film	cell boundary	protoplasmic action or vital processes.

The human system is thus a heterogeneous system, but so perfect as to act as an almost homogeneous one. It may be considered as a negatively charged suspensoid, where the particles are negative in regard to the liquid phase and their stability may be changed by alterations in charge. The human cell acts as an electrode reversible to cations.

Cations are more effective against the cell boundary as the positive cations are attracted to the negative cell surface. However, Murkerjee, of Calcutta, has shown in negatively charged suspensoids that the cations divide themselves into two classes, the uni-

valent cations which increase the stability and the bivalent and trivalent cations which decrease the stability of the negatively charged suspensoids. The univalent cation has a single electrical charge or electron to give and the bivalent and trivalent cations have two and three electrons to give. Substances like sodium and potassium are univalent and calcium and magnesium are bivalent and these have different action, so that there are sodium and potassium different in action in the human body from calcium and magnesium and these are the four important inorganic elements of the blood and of the body.

In the human system the univalent sodium and potassium salts produce alkalinity and the bivalent calcium and potassium salts produce acidity in the secretions and in the liquid phase (the blood plasma). Injected in the cell, sodium and potassium salts produce liquefaction or dispersion and calcium and magnesium salts produce coagulation or aggregation of the colloid. There is a different action, therefore, of the univalent and bivalent cations in the human body and the same holds true for the effect upon nerve action.

The nervous control of the functioning cells of the body is exercised mainly through the vegetative nervous system. There are two nervous systems in our bodies: one the cerebrospinal or voluntary, with which we think and cause our voluntary muscles to move, and the other, the vegetative (also called sympathetic, involuntary or autonomic) which presides over our unconscious life and the action of our great organs in circulation, digestion, various secretions and metabolism. This vegetative system controls the unconscious functions of the body, the heart that beats, the lungs that breathe, the intestines that digest, the kidneys that secrete, bloodvessel capillary amplitude, metabolism and all the varied mechanism of life outside of voluntary controlb. This nervous system is called vegetative because it manages the part of us that is like a vegetable, while the cerebrospinal nervous system (the brain and its ramifications) takes care of all of us that is unlike a vegetable—the thinking, moving part. It is estimated that the control of the will over the voluntary muscles through the cerebrospinal system cannot possibly expend more than twenty-five per cent. of the energy of the body, while the organ functions, controlled by the vegetative nervous system, constantly expends daily at least seventy-five per cent. of all the energy in processes of which we are unconscious. It runs the show, and leaves the cerebrospinal system free for thought and action.

These two nervous systems are independent and interdependent in the reciprocal relation so frequent in the human system. There is a connection between them in the brain and spinal cord and our well-being is dependent upon harmonious interaction. The voluntary actions relate the creature to its surroundings, but presume or are directly dependent upon harmonious cooperation of the involuntary activities. The development of the central nervous system has been of immense importance in the evolution of man. The steady growth and complexity of the central nervous system has made possible the development of *will power* with all that it implies and the domination of man over the rest of the animal kingdom. Since this has been the progress of evolution, the more this concentrated cerebral (voluntary) system is freed from the subordinate (involuntary or vegetative) system with the continuance of harmonious interaction, the greater will be the advantage to the animal. The cells of the vegetative system originally formed part of the central or cerebral system and, by their migration toward the great organs, freed the central nervous system from a large mass of nervous effort and so enabled the brain to exercise general control over the whole scheme. It is as if the central nervous system found it had too big a job and delegated the routine to another, the vegetative nervous system, while it remained to direct the destinies. The cerebrospinal system is the captain who cons the ship, while the vegetative system is the multitude of engineers, firemen, coal passers, cooks, stewards, etc., that keep the fires up, the engines running and feed the crew and passengers.

But there must be pleasant relations between the deck gang and the black gang, between the bridge and the engine room, otherwise the voyage will be a hard one. The central nervous system can affect and is affected by the condition of the vegetative system. The vegetative system must do its work well to leave the brain free to control and still be so close, as to allow the brain to react to changes and needs of the body system. Yet if the relation is too close, such things as emotions will be too readily felt and make too great impression on the action of the human system (in digestion, circulation, etc.), and so cause upset in vital equilibrium.

So that we have found in human life three most important factors in the production and control of its processes: 1, the application of energy of life from atoms; 2, the colloidal structure of the human protoplasm, and 3, the control exercised by the vegetative nervous system over these processes. These are the three great fundamental principles of life in the vertebrate and a study of their action and deviation is necessary to the understanding of human vital processes.

The control of the vegetative nervous system is largely in its action upon involuntary muscle, of which example is in the pupil of the eye, the heart, the muscles of our blood vessels (arteries, veins and capillaries). There are two kinds of muscles, voluntary and involuntary: the cerebrospinal system controls the voluntary and the vegetative the involuntary. The latter is widely distributed in the human body, so that its control is most important. The capillaries of the circulatory system, where most of the interchange of substances with the blood goes on, have smooth muscles (called Houget cells) and, when it is considered that the capillaries in a small man have been estimated by Krogh at a total length of sixty-two thousand miles, or two and a half times around the world, and their total area at one hundred and twenty thousand square yards, the influence of the vegetative nervous system in contracting and dilating these and its effect upon metabolism (or body processes), through this means alone, may be well appreciated. Its control over the heart which normally pumps seven and one half tons of blood a day, equivalent to lifting a ton of blood 122 feet high, is another example of its action. If it makes the heart run too fast and too hard, the work is increased and increase of twenty per cent. blood pres-

sure means using up so much more energy and lifting a ton of blood 152 feet instead of 122 feet high daily. This involuntary system exercises its control in dozens of other ways so that it is vital for vital processes that the engineers and the black gang keep well on the job.

The vegetative nervous system consists of two divisions—the vagus and sympathetic parts. These two divisions are antagonistic and a balance. When one is increased, the other is depressed. The proper tone of vital processes and the involuntary muscle depends upon the even balance of these two parts. In addition, these work in different ways, the vagus division stimulates the stomach and intestine and slows and weakens (inhibits) the heart, while the sympathetic division increases the heart's action (stimulates) and slows up the stomach and intestines. It is as if the black gang on the ship were in two shifts and had care of two engines. The starboard watch of the black gang (the vagus division) makes the cook's galley and the commissariat (the gastrointestinal tract) work hard, but cuts down steam on the turbines (the heart) and the port watch (the sympathetic division) keeps up steam on the turbines, but cuts down on the cook's galley. But both are necessary to proper running, and if one works more than another, it will go hard with the ship. The proper balance of both sides of the vegetative nervous system is then necessary to the proper balance of the human craft.

It is possible in a number of ways to arrive at an opinion of this balance by various examinations of the human body. These are more or less exact and the most satisfactory method is by considering the amount of contraction or dilatation of the involuntary muscles which are contracted by the vagus division in the pupil and gastrointestinal tract and dilated by the sympathetic division of the involuntary nervous system. According to the researches of Ludlum and myself, it is possible by means of x ray pictures of the condition (postural tone) of the stomach and intestines to obtain an idea of the relative vagus-sympathetic balance and find out which of the starboard or port watches of the black gang were working too hard, and which were soldiering on the job, or whether the action was harmonious and in balance.

(*To be continued*)

An Outline of Public Health Administration in Toronto*

CHARLES J. HASTINGS, M.D., C.M., LL.D., D.S.C.

Toronto, Canada

Over three quarters of a century ago Benjamin Disraeli, talking over the heads of his colleagues in the British House of Commons, said: "Public health is the foundation upon which rests the happiness of the people and the strength of the nation, that is why I claim that the first duty of a statesman is the care of the public health."

Surely the mills of the gods grind slowly. In 1918 Mr. David Lloyd George, after having read the reports of the medical examining boards, in an address at Manchester on public health said: "If our nation had been looking after the health of our people as it should have done for the past twenty-five years, we would have had a million more men to put in the field and the war would have been won months before it was."

Every nation in time of war expects every man to do his duty, but whether or not he will be able to do so depends in a large measure on whether or not that nation has done its duty in making possible the development and maintenance of the best physical state of which he is capable. The war that we have just passed through has fully demonstrated to all nations that man power, brain and brawn, is the most valuable asset it possesses. Obviously, then, the first duty of a statesman or of a nation should be the care of that most valuable asset.

It is a comparatively few years since the principal duties of a department of health were considered to be the abating of nuisances, the efficient disposal of sewage and of garbage. However, after the discovery of the germ origin of disease, as revealed by the immortal Pasteur, it then became the duty of public health administrators to discover the haunts and habits of these disease producing germs and the various ways in which they were transmitted from one person to another, and endeavor to protect the public by placing beacon lights on the various rocks and shoals. While every department of public health requires a well organized division of quarantine, in addition to a full knowledge of the possibilities of the transmission of disease producing germs, it was thought for years that these organisms were for the most part transmitted through the air. That has long since been disproved. We know now that the great danger of the transmission of disease is through personal contact, either directly or indirectly. By direct contact is meant personal contact with the individual suffering from the disease; by indirect, the transmission of disease germs from the clinical case through various media. Of these we find that food and eating and drinking utensils are probably the most frequent channels through which they are transmitted; hence the necessity for rigid precautionary measures as regards the safeguarding of our foods from dust, dirt, and fly contamination and the efficient sterilizing of all eating and drinking utensils before being used. The Department of Health in Toronto requires the safeguarding of food from dust, dirt and insect contamination, more especially foods that are not submitted to a temperature that will destroy these germs before being consumed by man. In our regulations for hotels, restaurants and all eating houses, we require a permit, and before

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granting this permit the premises must comply with the requirements of the department, which includes the proper facilities for washing and sterilizing all eating and drinking utensils. These places are inspected regularly and in the event of failure on the part of the responsible parties efficiently to carry out these regulations, they are given timely warning and in the event of a recurrence of this negligence, their license is cancelled.

WATER AND MILK CONTROL.

Control of water supply.—The control of a water and milk supply of any municipality in our judgment is primarily and essentially a government responsibility. The control of the water supply is much more simple than that of the milk supply, inasmuch as it does not interfere with vested rights, the methods adapted being practically uniform in all nations and all municipalities, that is, filtration and light chlorination. In Toronto we make several bacteriological counts of our water every day as taken from the tap which means the water as consumed by the citizens. This is found to be for the most part practically sterile, the colon bacillus not being found present more than once or twice in twelve months. Consequently, our typhoid mortality has become practically a negligible quantity.

Control of milk supply.—The efficient control of a municipal milk supply is a much more formidable problem. In 1911 the Provincial Government passed a bill authorizing all municipalities in the Province of Ontario to frame by-laws and regulations governing their milk supply. Within six months from the passing of this bill, we had our by-laws and regulations in force for the securing of a clean milk supply.

This consisted of the careful inspection of all dairy farms by veterinary inspectors who examine the herds to see that they are in a healthy condition and also the various cow stables or byers from the viewpoint of cleanliness and proper ventilation. Rigid instructions are posted up in all dairy farms regarding the degree of cleanliness essential and the precautionary measures to be taken in connection with the milking of the cows. The hair is required to be clipped short from the flanks of the cow and from the udders so that it may not afford a lodging place for gross material of any kind. No wet milking is permitted and the milkers are required to wash their hands carefully before milking. The milk is immediately removed from the byers or stables to an adjoining milk house where it is strained and chilled as soon as possible. The milk is strained into sterilized cans which have been sealed when sent out and again sealed when returned to the distributor or to the milk stations. It is carefully supervised at every step from the producer to the dairy. The dairy or distributor is required to be equipped with pasturizing plants. This we consider absolutely essential, inasmuch as clean milk, free from gross contamination as determined by the sedimentation test, even though it has been taken from tuberculin tested herds, is not, in our judgment, a safe milk, inasmuch as it may have been handled and thus contaminated by someone suffering from a communicable disease or a carrier of these communicable diseases.

Unfortunately, in this country, as far as I have been able to observe, the great source of danger of cow's milk to the human is bovine tuberculosis. While not wishing to minimize for a moment the danger of bovine tuberculosis, which was demonstrated by all the Royal Commissions appointed in 1901, and by those engaged in research work ever since, to constitute from twenty-five per cent. to twenty-six per cent. of all cases of tuberculosis in infants or children under sixteen years of age, yet there is a much greater element of danger in connection with milk, as has been demonstrated by the fact that in the United States and Canada there have been between three and four hundred outbreaks of the various communicable diseases that have been traced directly to the milk supply, these outbreaks representing several thousands of cases. Obviously, then, the only way to make a milk supply absolutely safe for human consumption is to secure a clean milk and then make it bacteriologically clean by scientific pasteurization which efficiently destroys all disease producing germs. By scientific pasteurization we mean the raising of the milk to a temperature of 145° F. and maintaining it at that temperature for thirty minutes. The milk is then promptly chilled and bottled, the bottles being capped by machinery. The temperature of the milk is not permitted to go above 50° F. until delivered to the consumer.

There was, however, one weak spot in connection with our pasteurization, and that was that we found occasionally that some unscrupulous distributor would run the milk up to a temperature of probably 175°, or even higher, but for a short time. This was done for the purpose of economizing on fuel. Inasmuch as no system of inspection could overcome this, we purchased a sufficient number of Cambridge self-recording thermometers and had them placed on every pasteurizing plant in the city. These thermometers are owned and controlled by the Department of Public Health. Our inspector carries the key and removes the disc once a week. This has made this phase of the work practically fool proof.

Since 1914, when our ordinance requiring all milk not coming up to the standard of certified milk to be pasteurized scientifically and delivered to the consumer in sealed bottles, not a quart of milk has been sold in our city that has not complied with these requirements. In this way we feel that we have efficiently safeguarded our milk supply which is obviously subjected to greater possibilities of contamination than is any other food, and when one realizes that milk is the most valuable food we possess, these precautionary measures are not only fully warranted but absolutely essential. In fact milk is the only perfect food we have. It contains all the elements essential for the development of the infant and young child and is absolutely essential for the developing boy and girl, inasmuch as when it is added to the other food they take in their daily routine it secures for them a properly balanced diet containing as it does all three of the vitamines and the necessary amount of calcium and phosphorus salts that are so essential for bone development and that play a more important role in the efficient development of the teeth than any other food available.

The arguments that have been raised against pasteurization are absolutely untenable, with possibly the single exception of the influence of heat on the vitamines and this applies only to vitamine C, inasmuch

as vitamines A and B have a much greater resistance to the influence of heat and would require a much higher temperature than that necessary for pasteurization to have any deleterious effect. We are willing to grant, however, that a temperature of 145° maintained for thirty minutes may possibly reduce fifty per cent. the potency of vitamine C. However, this is not worthy of consideration in view of the fact that every pediatrist or authority on disease of children, recommends as a part of the routine diet of every infant and child from a teaspoonful to a tablespoonful of orange juice every day, depending on the age of the child. This secures for them an ample supply of vitamine C.

In the light of the knowledge we now possess, even if it were possible completely to control communicable diseases, that would only constitute, as it does, a fractional part of the activities of a department of public health, the aims and objects of which should be the development of a fitter race. In order to do this, we must begin our activities as soon after conception takes place as possible, having in mind, as Galton so fittingly expressed it, "where nature ends nurture must begin." Therefore, as the developing offspring is dependent entirely on the mother's blood for its nutrition, the necessity for efficient antenatal care is perfectly obvious. If the mother's blood is to be kept in a normal condition this means an ample supply of well chosen food that will constitute a perfectly balanced diet, proper hygienic surroundings, efficient exercise in the open air, sleeping in a well ventilated room, and in fact all other matters of personal hygiene essential for physical fitness. Therefore, the first activity of a department of health must be antenatal care, the second, the care of the newborn infant.

This care is provided for the most part by our well baby or child hygiene clinics where the mothers are required to bring their infants regularly for general observations, weighing and measuring, in order to determine whether their weekly or monthly gain in weight is sufficient. The mother also receives advice from an expert on the care and feeding of infants.

The next link in the chain of activities is that of the care of the child in the preschool age. This can best be linked up with the well baby clinics, as by doing so it saves additional organization and minimizes duplication.

The next link after that is the complete physical examination of the child on entering school, every child receiving a complete physical examination during the first year in school. This is always done where possible in the presence of one or both parents. All clothing is removed by the nurse in attendance before the physician begins his examination. If any physical defects are discovered a note is sent to the parents explaining this with a request that they consult their physician. If they cannot afford to have a physician, they are referred to the hospital clinics, that is, the hospital for children. Our nurses follow up these cases and see that these conditions are corrected. We then have medical, dental and nursing service during the entire school period, and another complete physical examination before leaving school. This serves a double purpose. In addition to ascertaining whether there are any physical weaknesses or any organic trouble, it also serves as a vocational guide. Then we have a division of industrial hygiene. By this division all industries in the city are carefully supervised in order to secure for the employees proper heating and ventilation and also, the installation of efficient devices for the control of trade dust.

EDUCATION

This is the most important factor in efficient public health administration. Education constitutes nine tenths, if not ninety-nine hundredths, of the permanent efficiency of public health administration. We are fortunately living in an age where people no longer want to be treated as machines. They want to know why they are required to do certain things and when they obtain this knowledge they are usually ready to do them and in this way, in the vast majority of cases, we can secure their full cooperation. However, education is not as simple as it might seem. Carlyle said many years ago that only one person out of five thousand thinks. I am of the opinion that if Carlyle had had the experience that most modern administrators of public health have, he would have said that only one person out of fifty thousand thinks. The human brain is lazy and likes to go along the line of least resistance. Therefore a part of our duty in education is to train the mind and make it more receptive. This can best be accomplished by our exercising patience and not being afraid to repeat. The experience of all teachers and educators has been that the secret of education is, as Sir William Osler expressed it, "reiteration, reiteration, reiteration," and to accomplish this one requires to express oneself in just a little different language so as not to produce irritation and at the same time make sure that a nonerasible impression has been made on the minds of our people. The process of education in any department of health must be based on this principle. You will recall that when Cobden was endeavoring to bring about a repeal of the Corn Laws, in a spirit of indignation with his colleagues in Parliament on the opposite side of the House he said that he was forced to the conclusion that the only way to get anything into the heads of the English people was to repeat it over and over again in just a little different language. This experience is not by any means limited to the English, it is the experience of all educators. However, I think we have failed in a great measure in the past through having kept our scientific knowledge for the most part within the precincts of our universities and laboratories. It is obviously essential that we democratize this scientific knowledge by translating it into terms that can be understood by the man in the street and the woman in the humblest home of our city.

There are various channels through which the public may be educated, one of the most important being by public addresses which should be delivered as far as possible by the Medical Officer of Health himself. Then there are newspaper talks, health bulletins, health leaflets, etc., but it must be borne in mind that there is a large number of citizens in every municipality who cannot read and a further number who can but do not read, and still others who read but do not think. Obviously the only way to get the information across to these people is by personal contact. I therefore feel that the most effective

means of disseminating public health knowledge is by public health nurses, who are rendering a valuable service in the homes. In their heart to heart talks with the mothers, they can explain the ways and means by which disease is transmitted and how it can be prevented, as well as a knowledge of the choice of foods in order to secure for the children a properly balanced diet at a minimum of expenditure. The nurse can also instruct the mother regarding the best ways of cooking and serving the food.

Probably one of the most practical demonstrations we have of educating the public is that in connection with the safeguarding of our milk supply. There are three points that are necessary to emphasize in this connection: first, that milk is the most valuable food we possess; secondly, that ordinary market milk unprotected has been responsible for the transmission of more communicable diseases than all other foods combined; and thirdly, that this valuable food can be made absolutely safe by a proper system of inspection that will secure a clean milk and then having that milk scientifically pasteurized. The history of the pasteurization of milk in America is rather interesting in this respect inasmuch as the first milk depots on the continent of America were established in New York city in the tenement house districts where milk scientically pasteurized was supplied to the poor children free of cost. This was done by a merchant prince, multimillionaire and public spirited citizen, Mr. Nathan Straus, on the advice of Dr. Abraham Jacobi and Dr. Rowland Godfrey Freeman, two of the most widely recognized authorities on the diseases of children on the American continent and with an international reputation. Under the guidance of Dr. Jacobi and Dr. Freeman, at a great expense to himself, Mr. Straus established and maintained these milk depots for years, and notwithstanding the indisputable evidence that they were able to produce on the reduction of infant mortality from gastrointestinal diseases alone, though these depots were established in 1892, it was not until 1909 that action was taken by the city of New York for the compulsory pasteurization of all milk not coming up to the standard of a certified milk. We had a similar experience in Toronto, as it required several years of intensive education before we succeeded in having regulations and ordinances passed requiring that all milk not coming up to the standard of a certified milk be scientifically pasteurized. Though the process of education is slow, yet the permanency of the results obtained fully warrants the efforts put forth.

THE PUBLIC HEALTH NURSE

The entrance of the Public Health Nurse into the field of preventive medicine has opened a new era in public health, inasmuch as most of the real, lifesaving problems in public health activities today have been made possible by the public health nurse, for instance, prenatal care, the presence of a nurse as the well baby clinics, and the follow up to the home, the presence of the public health nurse in the school and the following up of the cases in the home, and the tuberculosis work in connection with the tuberculosis clinics; here again her educational work as regards the prevention of tuberculosis in the homes is of inestimable value. Furthermore, the possibilities of hospital social service work being made a part of the general social service work of the department of health, the nurse acting as a mediator between the home and the patient in the hospital. In fact, I judge largely the efficiency of any organization of public health or administration of public health by the number of public health nurses they have.

In addition to this, we have in connection with the Department of Public Health in Toronto a social welfare division which investigates the administration of all institutions receiving grants from the city from the viewpoint of efficiency and serves in an advisory capacity to the Mayor and Council as regards the grants. In addition to this, they investigate all applicants to the Mayor's office for relief, making a careful study of each and every case, not only from the viewpoint of immediate relief, but also the possibilities of rehabilitation. This division works in close cooperation with all private social agencies in the city, acting in many cases as a clearing house and determining the cases should be handled by the city and those that should be handled by private agencies. This work is of extreme importance in all public health administration, inasmuch as at the very foundation of public health work is the solution of the social problem of the home. The revenue of the home being the only way by which we can decide whether or not the family can be properly nourished, properly clothed and properly housed, without which they are likely to have a lowered vitality and a lowered power of resistance and consequently a greater susceptibility to disease, the efficient administration of this division may often mean the difference between the families becoming an asset or a liability.

One will naturally conclude that this must mean a rather heavy expenditure. I refuse to call it an expenditure, but rather an investment, inasmuch as we are able to demonstrate by results that from the investment of this money the citizens get much larger dividends than any other that the municipality makes. For instance, Toronto's general mortality in 1909 was 15.8 per 1000, while in 1925 it was 10.2 per 1000, which means that with a population of a little over half a million Toronto is having over 2,500 fewer deaths every year than they would be having if the death rate of sixteen years ago still obtained. Toronto's tuberculosis mortality in 1909 was 102 per 100 thousand, while in 1925 it was just 46.5 per 100 thousand. Toronto's infant mortality in 1909 was 158.5 per thousand births, while in 1925 it was 60.2 per 1000 births. Toronto's typhoid mortality in 1909 was 48.7 per one hundred thousand; in 1925 it was 1.6. In addition to this, the control of a group of acute communicable diseases has been equally encouraging. For instance, the death rate in Toronto in 1909 from all the acute communicable diseases was 145 per one hundred thousand; in 1925 in was 25.3. It must be apparent, therefore, that public health administration has passed the experimental stage and that any municipality can within reasonable limitations have as much health as it is willing to pay for. One only requires to estimate what the saving of 2,500 lives means to a municipality every year, which means the additional saving of practically ten times that many cases of sickness, to appreciate fully that the money used in public health administration is an investment and not an expenditure.

Placenta Previa*

A. LOUISE McILROY, M.D., D.Sc.
London

(*Concluded from page* 416)

Packing the vagina, however, and version afford an opportunity before delivery of treating the collapse and shock from hemorrhage on ordinary lines, so as to strengthen the patient before the fetus and placenta are expelled. The method has some disadvantages for the fetus. During version the cord which is in a low situation may become prolapsed or entangled in the fetal parts and pulsation cease, or the buttocks by the efficiency of their pressure may abolish the circulation in the placenta and so cause stillbirth.

If the fetal heart ceases to be heard just after version has been performed, prolapse or strangulation of the cord has probably occurred. If it ceases during the progress of labor death is probably due to pressure on the placenta. Once hemorrhage is controlled by version, labor as a rule commences. This should not be hurried as the patient should be allowed to recover gradually from collapse if hemorrhage has been severe. Delivery should be allowed to take place spontaneously.

The practitioner should now be concerned with the prevention of postpartum hemorrhage, which can be effected by restoring the patient and therefore the uterus to a more normal condition. Salines, blood transfusion, etc., can be administered. Sedatives, such as morphine, may be given but with extreme caution for not only the patient's heart but also that of the fetus is weakened by hemorrhage. It is not advisable to give full pituitary extract as there is a risk of overstimulation of the uterus before delivery and consequent postpartum hemorrhage due to fatigue of the uterine muscles. It may be used in some cases in small doses to sensitize the uterus and bring on contractions where version has been performed and the onset of labor is delayed.

Postpartum hemorrhage does not occur so frequently as might be expected, especially when uterine contractions are well established before delivery. Its absence may also be due to the rapid expulsion of the placenta which usually takes place at a short interval after that of the birth of the infant. The placenta is usually of average size and weight.

DILATING BAGS

The use of dilating bags has been advocated in cases where labor has to be induced, and also to control hemorrhage. They are employed to lessen the risk to the fetus involved in version. Although in theory the use of a bag of the Champetière de Ribes type seems ideal, in practice it involves an element of risk to the patient and for the following reasons I have entirely abandoned its use.

It is not always at hand in emergencies. It is expensive and owing to the deterioration of the rubber it sometimes bursts when in position in the uterus. Owing to its complicated structure it is difficult to sterilize effectively. Its introduction requires the presence of a considerable degree of dilatation of the cervix. The chief objection, however, in cases of placenta previa is that when labor has commenced, the bag may be forcibly ejected by the uterine contractions, and the dilated lower uterine area is left unprotected by pressure. Severe hemorrhage may take place necessitating version for its control unless the presenting part of the fetus descends immediately to take the place of the bag. This descent does not always occur as the bag has a tendency to displace the portion of the fetus which is about to engage in the pelvis. Therefore, a patient who is being treated with a bag must have the close attendance of the medical practitioner in case such an emergency occurs.

When a dilating bag is introduced into the uterus, it must be inserted inside the amniotic cavity so as to avoid separation of the placental margin. In cases of complete placenta previa it must be introduced through the perforated placenta. The smaller balloons or rubber bags act as dilators of the cervix rather than as efficient compressors of the placenta.

Cases of incomplete placenta previa at term or in labor when first diagnosed may be treated by rupture of the membranes and by the application of forceps in vertex presentations when sufficient dilatation of the cervix is present. These cases as a rule give excellent results to both mother and infant but they are not a usual type.

Where the placenta is situated laterally the results of treatment are better than in those of the marginal variety. The chief point in the prognosis is the degree with which the placenta overlaps the internal os uteri.

Malpresentations may endanger the prospects of the child, but in premature cases they are not much of a complication. It must be borne in mind that Cæsarean section does not always mean a living child. If weakened by previous interference with its placental circulation an infant may not survive the sudden introduction to neonatal conditions and surroundings, for although we have no definite information on the subject labor must in some way gradually prepare the fetus for adapting itself to the changed conditions when it leaves the uterus. The prognosis of the child's life depends upon the amount of hemorrhage that has taken place.

Although in many cases the fetal heart sounds are still present on examination, the least interference may cause their cessation owing to the lowered resistance from loss of blood.

PART III.: CONCLUSIONS AND PRECIS OF FORTY-THREE CASES OF PLACENTA PREVIA

The substance of the foregoing paper has been based on the research upon the cases occurring in the Obstetrical Unit during the years 1921-1925.

*From The Obstetrical and Gynecological Unit of the London (Royal Free Hospital) School of Medicine for Women, University of London.

CONCLUSIONS

The cause of placenta previa is unknown.

The most probable theory is that the capsular portion of the decidua persists instead of the basal.

Recurrence of the condition at subsequent pregnancies is rare.

The lower uterine segment develops during the latter weeks of pregnancy and is stretched by the uterine contractions.

If the placenta is inserted completely or partially in this zone separation with consequent hemorrhage may occur.

The pregnant uterus is more sensitive when a menstrual period would have been due and contractions and hemorrhage are then more likely to occur.

Placenta previa occurs in about one in five hundred cases.

It is more frequent in multigravidæ than primigravidæ.

For clinical purposes it is classified into two groups, complete and incomplete. The latter comprises marginal and lateral types. The marginal is the most common.

Hemorrhage is the chief symptom. It varies from slight to severe and continuous recurrent attacks.

Sudden severe is worse than repeated hemorrhage. Except in rare cases where toxemia is present placenta previa occurs in healthy patients.

The diagnosis of placenta previa can be made from the abdomen if the placenta *souffle* is heard in the lower uterine zone. There is increased pulsation in the fornices, the cervix is softened, and if dilated the placenta may be actually palpated.

The prognosis is serious for both mother and child. Maternal mortality averages about six per cent. and is due to hemorrhage shock or sepsis. The fetal mortality at birth is almost seventy per cent. The survival rate is low. The chief causes of fetal death are antenatal shock, prematurity and operative interference. About seventy per cent. of infants are born premature.

Treatment is a choice between expectant and active interference. Expectant treatment should only be carried out if the placenta is incomplete, or the diagnosis doubtful.

The patient must be kept under careful observation with facilities for immediate operative measures if necessary.

In complete placenta previa the condition should be actively dealt with as soon as it is diagnosed. Cæsarean section is the only chance for the infant in these cases. It is contraindicated in premature cases with a dead fetus, or if patient is collapsed.

Version, although it endangers the life of the fetus, is the best possible method for maternal safety.

If the cervix is insufficiently dilated to admit two fingers it should be dilated by packing the vagina. Rapid dilatation or delivery is contraindicated.

Every precaution should be taken to restore the patient when in a state of collapse before delivery occurs.

Owing to hemorrhage and lacerations sepsis is probable in cases of placenta previa.

I am indebted to my former assistants, Dr. Charlotte Houlton and Dr. Gertrude Dearnley, and to my present assistants, Dr. Edith Hall and Dr. Gray, for their help in the treatment of these cases.

CASE REPORTS

I present below reports of forty-three cases of placenta previa occurring in the obstetrical unit.

COMPLETE PLACENTA PREVIA—NINE CASES

CASE I.—Multigravida 3, aged forty-two, pulseless on admission, one severe hemorrhage in six hours; in labor twelve hours; no fetal heart sounds. Vertex presentation; cervix three fingers; version, foot extraction; collapse treated; delivery two hours; stillbirth; placenta, five minutes; puerperium satisfactory.

CASE II.—Primipara, aged thirty-six; two and one half hour's severe hemorrhage; in labor; fetal heart sounds; vertex cervix two fingers; no evidence of toxemia; Cæsarean section; no attempt at respiration; stillbirth; membranes necrotic. Patient suddenly collapsed from hemorrhage four hours after operation, and died in an hour.

CASE III.—Primipara, aged thirty-two; old gonorrheal infection; no hemorrhage. Diagnosis from palpation of placenta p. v. at thirty-eighth week. Patient admitted for observation: some hemorrhage; antiseptic treatment of cervix; Cæsarean section, because of patient's wishes and an old infective cervix, and probable future sterility; live birth; slight pyrexia in puerperium. Recovery was satisfactory.

CASE IV.—Primipara, aged thirty-two; contracted pelvis, gonorrhea, complete placenta previa, no hemorrhage. Child born alive; some pyrexia during recovery.

CASE V.—Primipara, aged thirty-one; twenty-eighth week; criminal abortion attempted several times, always followed by severe hemorrhage; hemorrhage slight for four days; labor three days; no fetal heart sounds; vertex presentation; cervix two fingers; fetal head soft; membranes ruptured; perforation; macerated fetus delivered five hours later; placenta immediate; puerperium satisfactory.

CASE VI.—Multipara 3, aged thirty-six; twenty-eighth to thirtieth week; severe hemorrhage four hours; slight attack one month before; fetal heart sounds; breech presentation; cervix one finger. Packed twelve hours, foot extraction, cord pulseless on delivery; stillbirth; placenta one hour, battledore, old blood clot; puerperium satisfactory.

CASE VII.—Multipara 3, aged twenty-three; thirty-fourth week; severe hemorrhage one month before; diagnosed at antenatal clinic by souffle and vaginal examination; no hemorrhage; admitted, fetal heart sounds; cervix three fingers; breech presentation; foot extraction; delivery seven and one half hours; cord pulseless; stillbirth; placenta immediate; puerperium satisfactory.

CASE VIII.—Primipara, aged thirty-three; breech presentation; thirtieth week, in labor; hemorrhage not profuse; placenta perforated and leg brought down; stillbirth; recovery.

CASE IX.—Multipara 5, aged thirty-two; thirty-fourth week; hemorrhage severe, previous hemorrhage at thirtieth week; breech presentation; vaginal pack two hours, leg brought down; stillborn (cerebral hemorrhage postmortem); recovery.

INCOMPLETE PLACENTA PREVIA—TWENTY-SEVEN CASES

CASE X.—Primipara, aged thirty-three; recurrent slight hemorrhage; some hemorrhage on examination at antenatal clinic; admitted for observation at thirty-fourth week; no hemorrhage; readmitted in labor at term, some hemorrhage; vertex presentation; spontaneous delivery; live birth; some pyrexia due to perineal laceration; recovery satisfactory.

CASE XI.—Multipara 2, aged thirty-five; hemorrhage slight six weeks before; severe hemorrhage at term; not in labor; blanched; fetal heart sounds; vertex presentation; cervix two fingers; souffle above symphysis; packed version; labor began; no fetal heart sound; delivery three hours; stillbirth; placenta ten minutes; slight postpartum hemorrhage; puerperium satisfactory.

CASE XII.—Multipara 6, aged thirty-three; admitted for slight hemorrhage two days before labor; considerable hemorrhage at labor; cervix two fingers; vertex presentation; no fetal heart sounds; version foot extraction; delivery four and one half hours; child breathed but did not survive; puerperium satisfactory.

CASE XIII.—Multipara 2, aged forty-one; hemorrhage slight on admission, severe on examination; not in labor; fetal heart sound; vertex presentation; cervix one finger; quinine given, membranes ruptured; packed; head pushed down; delivery nine and one half hours; live birth; placenta thirty-five minutes; puerperium satisfactory.

TWENTY-ONE PREMATURE CASES

CASE XIV.—Multipara 2, aged thirty-two; thirty-eighth week; three attacks of hemorrhage at four week intervals; severe hemorrhage on admission; not in labor; fetal heart sound; vertex presentation; cervix two fingers; version. Cord prolapsed; delivery twenty hours; stillbirth; placenta immediate; battledore and velamentous; puerperium satisfactory.

CASE XV.—Multipara 3, aged thirty-seven; thirty-second week; severe hemorrhage three hours; not in labor; fetal heart sound; breech presentation; cervix one finger; packed twelve hours; repacked twelve hours as hemorrhage recurred; version delivery; one and one half hours; live birth; survived fourteen hours; placenta immediate. Temperature rose fourth day, coliform infection; patient died on the fifteenth day of septic pneumonia.

CASE XVI.—Primipara, aged twenty; thirtieth week; sudden hemorrhage four hours after ol. ricini; not in labor; fetal heart sound; vertex presentation; cervix one finger; packed; labor, pack removed; breech, foot extracted; delivery one hour; live birth, survived two hours; placenta immediate; puerperium satisfactory.

CASE XVII.—Multipara 3, aged thirty-two; thirty-second week; sudden severe hemorrhage; placenta not felt, admitted for observation; no hemorrhage, discharged. Readmitted seven days later, severe hemorrhage; not in labor. Fetal heart sound; placenta felt; cervix two fingers; vertex version; foot extraction; labor began, delivery seven and one half hours; live birth; placenta twenty minutes; puerperium satisfactory.

CASE XVIII.—Primipara, aged twenty; twenty-eighth week; sudden hemorrhage on micturition; not in labor; cervix closed; transverse presentation; packed; labor one and one quarter hours; version foot extraction; delivery nine hours; cord pulsating, child did not survive; placenta ten minutes; puerperium satisfactory.

CASE XIX.—Primipara, aged twenty-five; thirtieth week; intermittent hemorrhage; six days, said to be due to lifting heavy weight; not in labor; fetal heart sound; labor eight days later; cervix two fingers; vertex presentation; version, foot extraction; delivery two and one half hours; live birth, survived two days; placenta twenty minutes; puerperium satisfactory.

CASE XX.—Multipara 7, aged thirty-six; thirty-fourth week; hemorrhage several hours; not in labor; cervix one finger; packed twelve hours; repacked as there was no dilatation; labor in twelve hours; fetal heart sound; version; six hours later no fetal heart sound; delivery eight and one half hours; stillbirth; placenta five minutes; puerperium satisfactory.

CASE XXI.—Multipara 2, aged twenty-six; thirty-fourth week; hemorrhage one hour; blanched; not in labor; fetal heart sound; cervix two fingers; vertex presentation; version; foot extraction; delivery five hours later; live birth; survived twenty-four hours; placenta ten minutes; puerperium satisfactory.

CASE XXII.—Multipara 2, aged thirty-five; thirty-eighth week; hemorrhage twenty-four hours; not in labor; cervix two fingers; packed, expelled by pains in ten hours; breech presentation; fetal heart sound; delivery one hour; live birth; placenta immediate, velamentous; puerperium satisfactory.

CASE XXIII.—Multipara 5, aged forty-one; thirty-eighth week; hemorrhage several hours, not in labor; fetal heart sound; vertex presentation; cervix closed; sudden hemorrhage on examination; packed twelve hours; version foot extraction; delivery two hours; live birth; placenta ten minutes; puerperium satisfactory.

CASE XXIV.—Multipara 2, aged thirty-two; twenty-eighth week; considerable hemorrhage twenty-four hours; four weeks before; severe six days before admission; packed by doctor and kept in bed four days; hemorrhage recurred, admitted, not in labor; fetal heart sound; cervix one finger; breech; foot extraction; delivery four hours; live birth, survived twenty-four hours; placenta ten minutes; puerperium satisfactory.

CASE XXV.—Primipara; aged twenty-five; thirtieth week; some hemorrhage week before at antenatal clinic; placenta not felt; sent home to rest; severe hemorrhage next day; admitted; no placenta felt; under observation ten days; sent home; six days later readmitted, hemorrhage for six hours; no fetal heart sound; cervix three fingers; placenta felt; transverse, in labor, foot extraction; delivery six and one half hours; stillbirth; placenta ten minutes; puerperium satisfactory.

CASE XXVI.—Multipara 1, aged twenty-seven; thirty-fourth week; severe sudden hemorrhage one and one half hours; fetal heart sound; transverse cervix two fingers, in labor; version, foot extraction; no fetal heart sound; delivery ten hours; stillbirth;

placenta five minutes, battledore; breast abscess in puerperium.

Case XXVII.—Multigravida 8, aged forty-three; thirty-eighth week; hemorrhage at thirty-fourth week in a previous pregnancy; admitted having had severe hemorrhage for four hours; irregular hemorrhages six weeks; no placenta felt; not in labor; observation two days; no hemorrhage; awakened two a. m. in a pool of blood; fetal heart sound; placenta felt; version; foot extraction; cord prolapsed; delivery five hours; stillbirth; placenta ten minutes; puerperium satisfactory.

Case XXVIII.—Primipara, aged twenty-seven; thirty-second week; hemorrhage slight; no fetal heart sound; twins; placenta felt p. v. cord prolapsed after rupture of membranes had occurred; spontaneous delivery; stillbirth, puerperium satisfactory.

Case XXIX.—Multigravida 2, aged thirty-seven; twenty-four week; history of abortions and toxemia; no fetal heart sound; transverse; placenta felt p. v. hemorrhage recurred; admitted from district as placenta previa; in labor, cervix fully dilated; foot extraction; delivery fifteen minutes; stillbirth; placenta; five minutes; puerperium satisfactory.

Case XXX.—Multigravida 5, aged thirty; twenty-eighth week; hemorrhage before admission; toxemia, albumin; placenta felt; not in labor; began in two hours; more hemorrhage; cervix dilating; version; foot extraction; delivery two hours; stillbirth; placenta five minutes; puerperium satisfactory.

Case XXXI.—Multigravida 8, aged forty-one; thirtieth week; sudden hemorrhage two weeks before; hemorrhage severe on admission; not in labor; vaginal pack, hemorrhage, version, leg brought down, pulse very rapid, blood transfusion, etc. Patient died undelivered as she was in a state of collapse on examination.

Case XXXII.—Multigravida 1, aged thirty-seven; thirty-eighth week; coli infection of bladder; hemorrhage on examination; Cæsarean section as head was not engaged and fetus large; alive; recovery satisfactory.

Case XXXIII.—Multigravida 3, aged thirty-two; severe hemorrhage for five days, in labor, cord and arm prolapsed on admission; fetus dead; delivery by decapitation; puerperium febrile, recovery.

Case XXXIV.—Multigravida 7, aged forty-two; cardiac complications, hemorrhage, fetal heart sound not heard; version, leg brought down; stillbirth; recovery.

LATERAL PLACENTA PREVIA

Case XXXV.—Multigravida, aged thirty-two; considerable hemorrhage three days; no fetal heart sound; cervix two fingers, in labor, membranes ruptured; spontaneous delivery sixteen hours; stillbirth; some p. p. h.; puerperium satisfactory.

Case XXXVI.—Multigravida 3, aged thirty-eight; slight hemorrhage; in labor, membranes ruptured; delivery live birth; placenta ten minutes; puerperium satisfactory.

Case XXXVII.—Multigravida 4, aged forty-five; thirty-fourth week; hemorrhage twenty-four hours; intermittent for four weeks; fetal heart sound; placenta souffle above symphysis; not in labor; vertex; cervix two fingers; version, foot extraction, some hemorrhage; delivery three hours; stillbirth; placenta five minutes; puerperium satisfactory.

Case XXXVIII.—Multigravida 7, aged thirty-three; thirty-fourth week; hemorrhage intermittent two weeks; not in labor; placental souffle; fetal heart sound; cervix one finger; vertex; hemorrhage, manual dilatation; version; foot extraction; delivery six hours; live birth; placenta 10 minutes; puerperium satisfactory.

Case XXXIX.—Multigravida 1, aged twenty; thirty-sixth week; slight hemorrhage; in labor; fetal heart sound; vertex, forceps; live birth; placenta ten minutes; puerperium satisfactory.

Case XL.—Multigravida 3, aged forty; twenty-eighth week; considerable hemorrhage; no fetal heart sound; not in labor; vertex; cervix closed; packed; labor four hours later; version five hours later; delivery twelve hours; macerated fetus; placenta ten minutes; puerperium satisfactory.

Case XLI.—Multigravida 8, aged forty-three; thirty-eighth week; hemorrhage from thirty-second week, not in labor, version, leg brought down, stillborn; recovery.

Case XLII.—Multigravida 7, aged thirty-three; thirty-second week; hemorrhage for some weeks slight; fetal heart sound heard; hemorrhage intermittent during observation for four days; cervix dilated digitally, version, leg brought down, child alive and survived; recovery.

Case XLIII.—Multigravida 2, aged thirty-one; thirtieth week; intermittent hemorrhage from twenty-sixth week; cervix dilated, membranes ruptured, spontaneous delivery; child survived forty-eight hours; recovery.

The Principles in the Treatment of Cancer*

RICHARD J. BEHAN, M.D.
Pittsburgh, Pa.

It is difficult to begin a paper on the treatment of cancer because at the present time cancer does not offer to us definite conclusions as to its etiology or the physiological changes controlling its development. If it were an ordinary type of disease of which the cause was known and for which a definite routine of therapy could be defined, the treatment might be divided into, first, the prophylactic or preventive treatment; second, the active treatment, and third, the treatment of sequelæ. Since the causative factor is unknown, and the biology of its development is but hazily postulated, it is difficult scientifically to formulate for cancer a system of therapeutics as is done in the modern methods of treating other types of disease.

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PROPHYLAXIS

There is no doubt that trauma, especially that which is long continued and which is repeated with about equal intensity in the same location, is a potent cause of cancer. It is likely that injuries occupy a higher place as an etiological factor in cancer production than is usually assigned to them. It is sometimes very difficult to correlate the trauma to the cancer which follows, because there usually is such a long period of time elapsing between the trauma and the appearance of the cancer that the relationship between the two is obscured. Villata found that 2.23 per cent. of 762 cases of cancer gave a definite history of a single severe trauma. The interval between the trauma and the onset of the disease ranged from a few weeks to several years.

However, that a relationship between trauma and cancer does exist, cannot be doubted by anyone who has interested himself to a sufficient degree in the etiology of cancer. Trauma may be either mechanical, chemical or thermal. A mechanical cause of cancer is present in those who have bad teeth or misplaced, badly fitting plates. Irritation is also due to pressure from collar buttons in cancer of the neck and in irritation of glasses on the bridge of the nose. We find irritation and cancer arising from thermal agents, such as the cancer in the natives of Kashmir, who carry charcoal for heating purposes in wicker baskets over the abdomen; we find cancer of the esophagus in the Japanese who continually eat hot rice. Peculiarly, it is found only among the men who are served with the rice when it is hot; the women eating the cold rice. There has been a case in which a man who was a tinner had a cancer in the forearm, developed on a chronic dermatitis. This man, while at work, continually had the forearm (on the ulnar side) exposed to the heat of a furnace. There are also the well known examples of irritation cancer of the lip in pipe smokers. We also know that radioactive substances will cause cancer and have examples of it in cancer on the parts exposed to the rays in radium and x ray workers.

That irritating substances may of themselves cause cancer is exemplified in the cancer found among shale workers in the north of England; the cancer of paraffin workers and of those who work with arsenic, etc. Irritation from parasites will also cause cancer, as we find the bilharzia producing cancer of the bladder. Aniline workers have cancer in the same location. Cancer is also produced by the irritation which is normally present in scar tissue, especially when the scar is in a location subject to irritation, as at the cervix uteri.

It is likely that irritation of itself produces some change in the irritated tissues which lead to the cell proliferation. Therefore, as a prophylactic measure all such irritations should be removed.

Glands of internal secretion, especially the hypophysis, may have influence upon the development of cancer. This has been experimentally determined by Seele, who shows that the time of incidence of a tar carcinoma in rabbits is definitely retarded by the injection into these animals of a preparation of the anterior lobe of the hypophysis. However, how these facts can be used for the elaboration of a method of protection against cancer, either curative or prophylactically, is as yet undetermined.

According to findings of the Imperial Cancer Research, 1922, repeated and prolonged exposure to the x ray produces the same symptoms as a Vitamine B deficiency, which in time produces progressive diminution in blood platelets. It also causes a diminution in lymphocytes. We know that in carcinoma, usually the lymphocytes are increased. However, here again enters a contradictory factor, for Simmons has recently shown that in mice, those which had the most marked lymphoid proliferation and the most abundant lymphocytes had carcinoma develop and grow apparently unhindered. It is also interesting to know that Itchichawa's injection of small amounts of olive oil into mice, intraperitoneally, produced an immunity to cancer. These animals exhibited marked lymphocytosis. Lymphocytes, according to Grobly, are the natural defenses of the organism against cancer. He thinks that the small cell infiltration about a cancer area carries nucleoproteid to the cancer cells, as found in the disintegration of cancer cells in the lymphoid tissue. He finds that cell nests which are cut off from the main bodies are beginning to cytolyze so that he thinks that the round cells infiltration not only has the effect of cutting off the nourishment to the cancer cells, but acts against them. Increase of the lymphocytes is also thought by many to indicate a tendency to resistance. This action of the lymphocytes possibly may explain the deleterious action in some cases of a local hypertoxic dose of x ray because the high dosage of the x ray will destroy the lymphocytes which apparently may be one of the protective agents of the body against the carcinoma.

A pertinent fact is that the patients in whom the lymphocytes are highest in proportion to the total blood count do best under any type of cancer treatment. Also, from recent studies, it appears that the lymphocytes may vary with the plasmic acidity; the greater the acidity, the greater the percentage of lymphocytes. Smaller doses of x ray are more beneficial in stimulating lymphocytic reaction than are the large toxic doses. The seemingly contradictory conclusions of students of the cancer problem, render difficult the formulation of a definite and logical therapy yet, if a man with an encyclopedic mind and the faculty of clear and logical deduction should interest himself in the cancer problem, he might, from the vast array of experimental evidence which is now available, be able to draw some definite conclusions as to the actual causative agency. When this agent is known prophylactic protection may be instituted against it and active destruction when it is present may be undertaken, with fairly definite assurance of success. Until such time, we must use such means as are at hand must be used in our struggle against cancer. This now leads me from a discussion of the theoretical into the field of the practical.

ACTIVE TREATMENT

The active treatment of cancer may be divided into local destruction and constitutional treatment. Local destruction at the present time seems to be the only absolute way of curing cancer. The agent instrumental in causing local destruction varies as to location of cancer accessibility of growth and availability of means of treatment. The agents are, first, caustics; second, the cautery, that is, the hot iron; the electric cautery or the fulguration apparatus. We may use

for the same purpose, i. e., to cause destruction of the growth, radioactive substances such as radium and the x ray. Radium may be either applied in the form of its salt or by means of emanation enclosed in capillary tubes. The x ray that is used may be of either low or high voltage, depending upon the location of the growth and the means at the disposal of the therapeutist.

Local destruction is best and most thoroughly carried out by direct excision of the growth, either by the knife, by the hot cautery or by the socalled radio knife or cold cautery, by which there is no charring of the tissues. Surgery may also be used as an accessory measure in order to produce changes and alter conditions which may have an influence upon the growth. For instance, the ligation of the blood supply, fascial lymphatic excision, sympathectomies and short circuitive operations such as gastrostomies in carcinoma of the esophagus or in carcinoma of the alimentary tract above the stomach; jejunostomy in carcinoma of the stomach; enterostomy in carcinoma of the bowel and colostomy in carcinoma of the rectum and anus.

It may be held as an axiom that no matter how the local growth is destroyed, if the destruction is thorough, it is of value. However, the irritation accompanying the destruction should be as mild as possible, because we should not forget that localized irritation of itself is the most potent cause of cancer, and it is likely true that the less the irritation produced by the removal of the growth, the less is the growth likely to recur. There is considerable fear of the implantation of cancer cells in a wound when the neoplasm is excised by the knife. That such implantation is possible, I have demonstrated in the treatment of an inoperable carcinoma by means of alcohol, with the idea of producing a protective wall of fibrous tissue. Alcohol was injected peripherally around the tumor. In the path of the needle in three instances, carcinoma metastases developed. There is no doubt that I was instrumental in carrying the cancer cells from their former location into the new area in which they developed.

In the accessory treatment of carcinoma, the surgeon should aim, first, to conserve the resources of his patient. As the carcinoma cells are very active in development and require a considerable amount of nourishment, much more than the normal surrounding tissue cells, it is logical to assume that curtailment of the blood supply to the part would be a useful measure. With this object in view, in thirty-five cases of carcinoma of the face, I have on the involved side, ligated the external carotid artery and dissected and removed the fascia, and the submaxillary gland, and in ten days have ligated the external carotid artery on the opposite side. At the time of the ligation of the second vessel, the remaining fascia of the submaxillary triangle of the neck, with the accompanying lymph glands was removed. The rapid diminution in size of the tumor has been remarkable even after ligation of one external carotid artery. The beneficial effect upon the tumor may be partly ascribed to the reduction of the inflammation edema which favors cancer growth. Bainbridge noticed similar results. There is immediate cessation of pain; the foul discharges are lessened and the patient is greatly improved. I was under the impression that the beneficial results were due to the lessening of the blood supply, although I was aware of the fact that the nutrition of the face and of the site of the local disease even after tying of both external carotids did not seem to be especially affected. The easing of the pain I also ascribed to the decrease in the edema with consequent reduced pressure upon the nerve filaments in the involved area. This may not be entirely true. It is likely that in ligating the external carotid arteries, I blocked the accompanying sympathetic nerve irritation and thus reduced the edema in the affected area. Analogous is the improvement noted in edema of the feet with ulceration when femoral arterial sympathectomy is performed.

These facts are extremely interesting and perhaps may indicate to us some causal relationship between sympathetic nerve irritation and cellular overproduction. Turner (1) states that cells when they lose their function do not necessarily die but if they have nourishment and the external stimulants of growth, they continue to live and multiply. If the central control through the sympathetic to the cells is cut off, the cells continue to be influenced by function and they live and multiply indefinitely.

How curtailment of the blood supply may act upon the tumor in a beneficial manner is difficult to say. It is known that cancer tissue will continue to grow in a person who is starving; in other words, the active cancer cells will use the tissues of their host for their nutrition, so that while the tissues of the host become less in volume and functional activity decreases, the cancer tissue continues to develop. However, there is an added factor in starvation which may not be beneficial for cancer tissue proliferation and that as starvation progresses the tissues become less alkaline and more acid in reaction. It seems to be necessary for the continuation of the growth of carcinoma cells, that the media in which they are should be acid. Therefore, when we reduce the nourishment of the tissue of the face by ligating the external carotid arteries, and at the same time as is usually the case, the superficial and some of the deep veins are ligated, we block off from this area of the face the blood supply and produce starvation acidosis. If this is so, we should then supply locally some counteracting measures. This we have attempted to do with indifferent success by surfusing through the facial artery the tissues of the face on the same side as the tumor with five per cent. solution of sodium bicarbonate. Ligation of both internal iliacs in carcinoma of the uterus apparently has produced marked benefit. *Ligation of the blood supply prior to radiation seems to enhance the beneficial effects of the radiation.* The ligations of themselves give no permanent benefit but are adjuvants to other therapy; particularly x ray and radium. Ligation of the blood supply also renders the danger of hemorrhage in the large ulcerating tumors of the face and tongue less probable.

Excision, however, in all cases where possible, without too great danger to the patient and extensive deformity from tissue destruction, should always be done.

In our work, the greatest part of the tumor is resected by the endotherm, care being taken, however, not to use this knife in too close proximity to important vital parts. Here a sharp dissection with a cold

knife is done, although Wyeth even here recommends the endotherm. In our surgical operations, we have thought wise after removal of the growth, to form a barrier of resisting cell tissues, fibrous in character, in the lines of direction in which the cancer may advance. For this purpose we implant peripherally, where it is possible, seeds of radium emanation of one half m.c. each. In cancer of the breast, I try to place them at the points of emergence of the vessels in the intercostal spaces, especially near to the upper surface of the lower rib. I have also inserted them in close proximity to the large vessels and the nerves of the neck, but have always placed between them and the vessel or nerve, a small piece of muscle, one cm. in diameter, so that the radium seed does not lie directly upon the vessel or the nerve.

Preliminary to surgical removal röntgen radiation is usually given for the purpose of production of limiting fibrosis in addition to whatever direct destruction of the cancer cell may occur.

If the tumor is of the face, cheek or of the throat, or of the tongue and is rather large and requires extensive radon application or extreme radical surgery. Gastrostomy is made thus relieving the upper portion of the alimentary tract of all irritation which food particles, heat and cold, have upon the denuded and diseased tissues of the mouth or throat.

(To be concluded)

Protein Therapy in Pelvic Infection

HARRY PIKE, M.D.

New York

In view of the recognized value of foreign protein injections, especially of milk, in the treatment of arthritis and other infections, it was a natural sequence that this method of treatment should be tried by the gynecologist. But it was only within the last five years that it was seriously considered in this country as a means of combating pelvic infection without resorting to mutilating operations.

Petersen (1), in his interesting book on protein therapy and nonspecific resistance, recounts the fascinating history of protein therapy. It grew out of the serum and vaccine therapy prevailing during the last thirty years. The basic principle in serum and vaccine therapy is the relief of disease by specific means directly related to the disease. But protein therapy rests on a nonspecific basis. In other words, its basic tenet is that many infectious diseases may be relieved by the administration of nonspecific substances not directly related to the infection itself.

In America, Gellhorn (2) in 1922 introduced the protein therapy of pelvic infections. In ten of his cases of female gonorrhea, six patients were cured completely and two improved by this treatment. Gellhorn prefers milk injections to other foreign proteins. He believes that the protein substances, introduced intramuscularly, subcutaneously, or intravenously, have the faculty of stimulating the cells of the body to greater physiological activity; that is, of "activating the protoplasm." All the cells feel this rejuvenating influence, but especially those that have been damaged and depressed by infection.

According to Gellhorn, it is mainly the tubes, the uterus, and possibly the bladder to which this treatment should be directed. The ovaries seem to remain refractory, and gonorrhea of the cervix does not appear to be favorably influenced. These organs, in Gellhorn's opinion, should be treated by other measures. In general, foreign protein therapy brings about absorption of exudates but has no influence on adhesions.

Simon (3) in 1922 reported favorable results with foreign protein injections in twenty-six cases of septic puerperal affections and thirty of febrile abortion. His experience led him to recommend this form of treatment of puerperal sepsis and especially in febrile abortion.

Mohler (4) in 1925 reported success in the treatment of ten cases of pelvic infection with milk injections. His series included five cases of salpingitis and two of pelvic peritonitis. The patients were given five or six injections of milk at intervals of one week. In every case, the patient showed definite general improvement and the pain was diminished. A gain in weight, improved appetite, and an abatement of the secondary anemia were noteworthy.

HOW BENEFIT IS ACCOMPLISHED

The nonspecific protein reaction is diphasic in character. The first phase is marked by an intensification of the symptoms of the disease, both constitutionally and locally; the second, by improvement and reconstruction. General euphoria, a diminution of both local and systemic symptoms of the disease, and sometimes a complete disappearance of the lesions occur during this stage.

When an injured cell is restored to its original form and functions, it passes through a gradual series of morphological changes. These changes, which have repeatedly been demonstrated histologically, are of such a nature as to suggest a process of recharging the cell with energy. The probable explanation of the benefit following nonspecific protein therapy is that it acts in just this way; that is, to recharge the cells with energy.

Experience has taught that various physical agents, such as fresh air, sunlight, water, heat, and other means of producing hyperemia, exert a powerful influence on the cells of the body. However, none of them appear to be quite so potent as foreign protein injections.

Whatever the ultimate explanation or theory for the beneficial results that have been observed after nonspecific protein therapy, it will suffice, for the present, to point out that the depleted cells are recharged, as has been demonstrated histologically. By this means they are enabled to resist successfully the

invasion of pathogenic microorganisms. Rejuvenated, as it were, the cells develop strong antibacterial and antitoxic properties, and the phagocytic activity of the leucocytes is greatly increased. At the same time, the local metabolism is intensified. As a result of all these favorable reactions, collections of pus may be absorbed and the integrity of the affected tissues restored to normal.

The application of protein therapy to the treatment of gonococcal infections of the fallopian tubes is an excellent example of the benefit that may accrue from measures that enhance local resistance. If the stimulation of the affected cells is sufficient and the invading organisms suffer a temporary lowering of their virulence, the result is an immediate victory for the defending tissues.

Likewise, in puerperal sepsis, an increase in tissue resistance may be the factor that decides in favor of recovery. From the original site of infection, the pathogenic microorganisms spread by way of the lymphatics and blood stream to invade the entire body. If the cells of the body are brought to the highest peak of antibacterial efficiency by means of foreign protein injections, their chance of eliminating the infection, or at least of localizing it where it will be amenable to surgical procedures, will be increased proportionately.

Petersen (1), and also Lendig (5), list various protein substances that have been used experimentally and clinically to increase nonspecific resistance. They include milk, egg albumin, normal blood, immune serum, antitoxins, cerebrospinal fluid, pleural fluid, and other substances. For practical purposes, milk injections have been found most satisfactory.

HOW MILK INJECTIONS ARE GIVEN

In my earlier work I used whole milk, sterilized either in an autoclave or by boiling for ten minutes. Later, I have used aolan, which I prefer. This is a fat free, sterile milk, furnished in ampules and specially prepared for nonspecific protein injections.

The gluteal region is the best site of injection. A long needle should be used and the injection made deep, as in the case of the mercury injections for syphilis.

The initial dose is five c. c.; the following doses, ten c. c. The injections are given at intervals of from three to five days, according to clinical improvement and the severity of the reaction.

As a rule, a general reaction follows the first injection in five or six hours. A mild chill and moderate fever are the rule. However, the temperature may rise to 104° F. and the fever be so severe as to give rise to a sense of euphoria, similar to that which occurs during the peaks of fever in tuberculosis. The patient looks and feels well notwithstanding the violence of the reaction. The leucocyte count may be increased to from twenty thousand to thirty thousand cells

Clinical improvement may begin after the second injection, sometimes even after the first. In other cases, however, more treatments may be required before the symptoms start to abate.

REPORT OF CASES

Case I.—L. B., female, married, aged thirty, gave a history of gonorrheal infection five years previously. Typical gram negative diplococci of coffee bean shape were found in the vaginal smears. Pelvic examination disclosed evidences of ascending gonorrheal infection. Bilateral pyosalpinx and pelvic peritonitis were present.

The patient was given eight injections of sterilized milk. At no time was there any severe reaction. The only other treatment used was the application of dry heat. The patient made a complete recovery and has been free from all disturbance for two years.

A remarkable feature of this case was the fact that the cervical gonorrhea cleared up without local treatment. Smears from the urethra and cervix have been negative for gonococci. In Gellhorn's experience, gonorrhea of the cervix was not favorably influenced by nonspecific protein therapy. In the present case, the milk injections unquestionably saved the patient from the necessity of a mutilating operation and gave a much better result than surgery could have attained.

Case II.—T. M., married, aged twenty-six, believing herself to be pregnant, tried to induce an abortion by inserting a catheter into the uterus. She was admitted to the hospital on September 10, 1925, with chills, a temperature of 105° F., and a pulse of 140. The white blood cell count was 25,000 cells. On examination I palpated a mass in the right side of the pelvis and bulging and fluctuation in the culdesac of Douglas.

After several milk injections there was complete absorption of the pelvic exudate. In this case the early use of protein injections, that is before exhaustion had set in, promptly checked the progress of the infection. The favorable result in this case of febrile abortion was similar to those mentioned in Simon's report. It appears that in cases of febrile abortion, the stimulation of the cells of the body produced by milk injections checks the progress of the infection, localizes the various embolic metastases, and favors the speedy circumscription of localized abscesses, thereby preventing the formation of secondary foci and generalized sepsis.

CONCLUSIONS

1. Nonspecific protein therapy is a valuable means of increasing the resistance of the tissues to infection, localizing infective foci, and preventing the development of general sepsis.

2. In the treatment of pelvic infections, especially gonorrheal involvement of the fallopian tubes, pelvic peritonitis, and febrile abortion, nonspecific protein treatment frequently gives results better than those of surgery.

3. Either milk sterilized in an autoclave or by boiling for ten minutes or aolan is the most suitable preparation for use.

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1269 Grand Concourse.

Right Diaphragmatic Eventration, Accompanied by Cardiospasm as a Reflex of Malignancy at the Cardia

MEYER GOLOB, M.D.,
New York

Our chief interest in this case concerns itself, not with cardiospasm as a reflex of malignancy, but with the eventration of the right diaphragm by the hepatic flexure of the colon. For, although eventration of the *left* diaphragm by viscera such as the stomach and colon is anatomically accountable and is met with frequently in medical literature, eventration of the *right* diaphragm by the proximal colon anterior to the liver, is, I believe, a rare finding, and as such worthy of special report.

The late Dr. Aronson makes mention of an occurrence of right eventration while describing a case of Hirschsprung's disease. "The curious feature," he remarks, "was that the dilatation was coincident with eventration of the diaphragm on the right side rather than on the left." In looking for a cause accounting for the right side eventration, he dwells on the fact that the symptoms persisted for only two years, and were felt directly subsequent to the injury sustained by falling off the car in a manner which inflicted violence to the right side.

In the case under discussion, however, a history of an injury or a disease affecting the motor columns of the cervical cord and in consequence the phrenic nerves which supply the diaphragm, is conspicuously absent. It is therefore reasonable to assume that the case is purely congenital, and that eventration may be symptomless and discoverable only accidentally. This accords with the findings of Carman, that "Elevation is usually, if not always, congenital or due to inherent weaknesses."

The relative infrequency of an occurrence of right side eventration may be gathered from a comparison published by Eppinger in 1911, and quoted by Aronson:

Type	*Right side*	*Left side*
True hernia	21	53
False hernia	34	527
Eventration	2	15

Thus it may be seen that the ratio of eventration to hernia is one to thirty-seven, and that of right eventration to left is one to seven and a half.

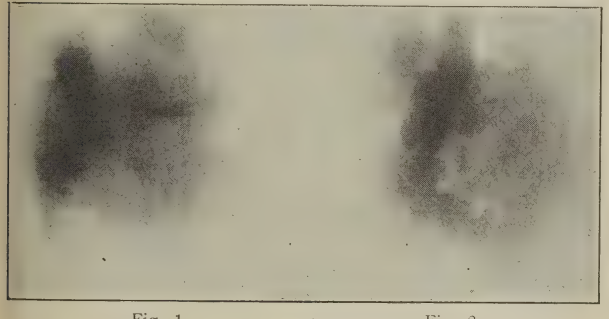

Fig. 1

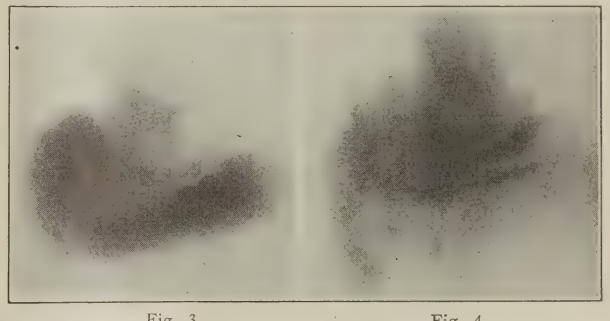

Fig. 2

FIG. 1.—Elevation of right diaphragm by hepatic flexure of the colon; dilatation of esophagus; distortion of cardia.
FIG. 2.—Technic taken for esophagus, with overlapping of esophageal shadow on proximal colon, due to high position of the latter.

CASE REPORT

CASE.—S. L., aged fifty-seven, a peddler; married; family history and previous personal history irrelevant.

The salient features of the case were as follows: Dysphagia of one year's standing, growing progressively worse in the last two months, affecting both liquids and solids, though less marked with liquids. Vomiting in mouthfuls (esophageal vomiting). Constipation since childhood, but worse in past few months (starvation constipation). Appetite, singularly good. Evidence of weight loss, the only outstanding fact in the physical examination. Esophageal intubation twenty-two inches from the incisor teeth recovered food free from gastric juice. Fluoroscopy of the chest revealed the right diaphragm elevated and its convexity increased as if pushed up by the hepatic flexure of the colon which was capped with gas. Arch of the diaphragm showed the respiratory movement. Radioscopic examination with the opaque meal showed complete obstruction at the cardia with marked dilatation above that point. The epicardia was smooth in outline, such as is seen in cardiospasm. However, administration of belladonna to physiological effect did not bring about passage to the contrast meal. Esophagoscopic examination by Sidney Yankauer revealed "a growth of the esophagus at the cardia."

Fig. 3

Fig. 4

FIG. 3.—Barium enema showing relation of the hepatic flexure to the right diaphragm.
FIG. 4.—The colon after evacuation.

The x ray films well illustrate the high position of the proximal colon (anterior to the liver and directly under the right diaphragm) as well as cardiospasm and a distorted gas bubble due to malignancy at the cardia.

I quote in part from Howard Lilienthal's report as follows:

"First procedure, December 7, 1925: An incision about five inches long was made through the left rectus muscle with the umbilicus level at the middle of the line. The entire hand could be introduced and it was found that the right diaphragm was elevated high in the chest. This accounted for the x ray appearance of this region. All attempts to withdraw the

stomach failed because the organ appeared to be fixed firmly to the vault of the diaphragm. Rendered visible by the aid of strong retraction and drawing down the gastrocolic omentum, a nodular indurated mass the size of a large egg was felt posteriorly and was supposed to be carcinomatous mass probably of the cardia. A jejunostomy was performed.

"*Second procedure, December 24, 1925:* An attempt to make an esophagogastrostomy met with disappointment."

From the operation and histopathological findings, the fate of this patient is obvious.

An analysis of the case lends support to the contention that eventration of the right diaphragm was, in this instance, undoubtedly congenital, symptomless and irrelevant to the pathology of malignancy.

The Endocrine Glands of Rats in Parabiosis*

PROF. GIACOMO PIGHINI, M.D.
and MARIO DE PAOLI, M.D.
St. Maurizio, Italy

(*Concluded from page* 404)

It is nothing unexpected, therefore, if, in an experimental condition of mutual intoxication, like that which obtains in the humoral fusion of two beings of different constitution and trophism and is realized in maximum degree in parabiosis between a male and a female, although they may be of the same species, we encounter morbid reactions of the sort described. Indeed, this is a confirmation of the concept of a functional synergy between these different endocrine tissues.

To the acknowledged relations between adrenal gland and testicles and adrenal gland and ovaries a recent contributor, Leupold, has made an addition by showing that the cholesterin content of both varieties of tissue maintains a mutual and close relationship. For example, diphtheritic intoxication or the administration of thyroidin, which causes atrophy of the ovaries with accompanying diminution of cholesterin in the thecalutein cells, is attended by scarcity of lipoids in the adrenal cortices. Our studies bring a fresh contribution, therefore, to the doctrine of these interdependent functions.

As respects the thymus, the relation of its parenchymatous atrophy to the contemporary invasion of plasma cells deserves to be further investigated, as we propose doing in the course of our experiments. Regarding the cortical portion of the thymus, as already found in preceding studies (Pighini), as an active participant in the nuclein metabolism of the organism, and considering the intimate genetic relations sustained by nuclein metabolism with that of the lipophosphates, we see here a connection with the other tissues primarily in close association with that metabolism, like that which exists between the sex glands and the adrenal cortex. The occurrence of thymolysis, equivalent to a thymectomy, surely cannot be a matter of indifference to the organism, and since thymectomy in young animals is followed by changes in the endocrine system analogous to those we found in our rats, the hypothesis is inescapable that one of the principal causes of the alteration affecting other glands and organs resides in exactly those lesions of the thymus which are likely to appear first.

Recent studies of the thymus, the adrenals, and the sex glands in man and woman by Leupold and by Walter have confirmed these experimental inferences by Pighini by showing precisely how the thymus exercises a stimulative influence on the growth and nutrition of the adrenal glands, the testicle, and the ovary. The thymic changes in our parabiosed animals, the first to be manifested, cannot and do not exercise an influence on the nutrition of these other glands and on others similarly concerned in the general hormonic condition of the organism. Inasmuch as in parabiosis the process of reciprocal intoxication continues, even when the specific cells of the thymus have already been destroyed in large measure, it may be understood how variable must be the consequences of this experimental condition and those of true thymectomy.

We have already referred to the special lymphatic reactions in the spleen and liver, resembling those of protein intoxication, changes which, especially those of the Malpighian bodies, may be encountered only during the early stage following thymectomy, while later on the specific lymph cells of that organ incline toward atrophy. We will limit ourselves, then, to the consideration merely of certain points of agreement in the relation between the two conditions which especially attest the functional synergy between the thymus, the sex glands, and the adrenal cortex (to which might be added the anterior lobe of the pituitary gland, however slightly specific may appear the reaction of that gland).

Our studies bear, again, upon the discussion and interpretation of other phenomena and teachings connected with the physiopathology of sex. As a sample may be cited the idea of a gland of rejuvenation attributed by Steinach to the interstitial tissue of the testicle, a gland which will hypertrophy when the seminal vesicles are brought into a condition of degeneration (by ligating the deferent ducts), and will then exercise a sort of beneficent influence over the various internal tissues of the organism, so as to arrest and attenuate the involutive processes which conduce to old age. Now the toxic condition of parabiosis, which produces alterations at the outset in the seminal cells and favors hypertrophying on the part of the interstitial gland, does not in the later

*From the Lazzaro Spallanzani Scientific Laboratory of the Reggio Emilia Psychiatric Institute, directed by Prof. G. Pighini.

stages confer any advantage on the individuals joined together, who continue to advance to marasmus, while the very interstitial gland itself participates in the complete atrophy of the whole seminal gland.

The experimental conditions of parabiosis are different from those set by Steinach for the attainment of rejuvenation. However, the fact is not without significance that one may produce by other measures a hypertrophy of the testicular interstitial gland which will exert no beneficial effect on an organism hastening toward marasmus, while this same gland shares in the general toxic effects, advancing all the while toward atrophy. The testicular interstitial gland behaves in this respect as does that of the ovary. In regard to the concept of rejuvenation produced by hypertrophy of the interstitial gland from injury to the seminal ducts, we share the scepticism of many recent experimenters, among them Thorek. Nissen has published similar results as regards degenerative phenomena on the part of the sex glands in parabiosis, and similar phenomena brought about indirectly by the action of x rays; and cases are on record of genital infantilism produced by Frankel and Geller by irradiating the pituitary gland (with x rays), by Poos by irradiating some other part of the body, and by Pfeiffer by the photodynamic action of light in individual animals. The danger, however, arises that in such experiments, dealing with small animals, the action of the rays may be cathodic rather than luminous, and so may be predominantly brought to bear on the thymus, which is far more sensitive to such agents than any other internal organ; in which case the analogy of the pathological process between these instances and ours of parabiosis will follow more closely.

While we propose to make a further study of the effects of parabiosis in animals castrated and not castrated, on gravid and nongravid females, on animals previously rendered toxic or deprived of some gland of internal secretion, and on normal animals, we conclude from this first series of experiments that

1. Parabiosis between two white rats is always followed a few minutes after the operative intervention by the phenomena of tremor and of tonic clonic spasm, lasting for a varying period, and caused by a reciprocal intoxication in the central nervous system. That system, in rats in this condition, presents a congested appearance.

2. Parabiosis between white rats of different sex, when practised in animals which have already reached sexual maturity (above three or four months of age), renders them sterile and predisposed to disease in the internal organs with a clinical course which must lead to death in a marasmic condition after a period varying from a few days to some months.

3. The anatomopathological picture presented by the animals, more or less accentuated according to the phase in which the examination is made, is the following:

In the *thymus,* which is the first organ to show the effects of parabiosis anatomically (after one day), autolysis of the small round cells caused their disappearance and that of all the epithelial cells of the gland, Hassall's corpuscles included, with substitution in their stead of a rich proliferation of plasma cells.

In the *testicles* degeneration of the cells of the seminal series with formation from the first of masses of protoplasm enclosing accumulations of spermatocytes (and spermatids), the socalled giant cells, which continue developing until the disappearance or complete absorption of these elements, reducing the canaliculi to membrana propria and Sertoli cells: contemporary hypertrophy of the interstitial gland in the degenerative phase of the canaliculi, and hypothophy of the same after atrophy of the seminal element is established.

In the *ovaries* a change takes place in the follicles which brings them into a condition of atresia, and in the corpora lutea which depletes the lutein cells; they become infiltrated, at any rate, with plasma cells, while the internal vessels dilate. The thecalutein cells of the theca interna appear in the early stages to effect hypertrophy in an increasing degree on the part of the interstitial gland, which tends in the subsequent phase, on the contrary, to atrophy.

In the *adrenals* hypertrophy of the medulla with some chromicizing of the cells, and scarcity of lipoids —of phosphatids and cholesterin—in the cortex.

In the anterior lobe of the *pituitary gland* congestion and accumulation of large basophile cells.

In the *liver* new production of lymph nodes.

In the *spleen* hypertrophy of the Malpighian bodies.

In the *pancreas* hypertrophy of the islands of Langerhans.

4. Parabiosis between two males presents the same phenomena, but less pronounced. Among the internal organs the thymus is always altered in the first stage. In one instance the thyroid was found in a condition of parenchymatous struma.

5. The changes in the sex glands of heterosexual pairs are not effected by a direct antagonistic action of the sex hormones of the testicles and ovaries, but by the combined humoral state of each individual, which varies more the more frequently the animals differ in sex and the more advanced their age.

6. Male female pairs become sterile. But, in case they have undergone parabiosis at a very youthful age (less than two months) and are of the same litter, the male may display generative ability on reaching puberty, but after a little he too will lose that faculty.

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Historical Medicine

Leonardo Da Vinci, Anatomist and Physiologist

LEOPOLD VACCARO, M.D.
Philadelphia, Pa.

Leonardo da Vinci is not generally ranked as a great physician, yet he was the founder of iconographic and physiological anatomy. One hundred years before William Harvey, as we are about to demonstrate, he had a clear conception of the circulation of the blood and gave an accurate description of it.

Morelli speaks of him as "perhaps the most richly gifted by Nature among all the sons of men." No greater painter ever lived, a preeminent mathematician, and mechanician, a man of an all embracing intellect, a seer who penetrated all his eye saw, a discoverer so inexhaustible that perhaps the world has never seen his like.

Leonardo seems to have interested himself in every branch of science, and everywhere through the mere penetrating power of his sight, coupled with the sagacity of his judgment, he appears to have forestalled science often by centuries.

LEONARDO DA VINCI
(From a drawing by himself)

William Hunter, who at the time of George III had seen the originals in the library of the King, wrote thus: "I expected to find anatomical designs adapted to a painter for the needs of his art; but I found to my great astonishment, that Leonardo had made a general and profound study. When I consider what pains he took for each part of the body, the superiority of his universal genius, his singular excellence for hydraulics and mechanics, the attention with which this man observed and studied the object which he had to design, I am fully persuaded that he was the best anatomist that lived at his time. Without doubt, he is the first who, to our knowledge, has introduced the practice of anatomical designs." Leonardo was the founder of illustrated anatomy.

He is also the founder of comparative anatomy. He has described the analogies that the organs of living animals present. He made comparative studies of man and monkey. His method by analogy leads us to acknowledge that all terrestrial animals are constructed on the same plan, that the same organs are found in all of them: the wings of the birds and the arms of man are similar members. In this respect he was the forerunner of the evolutionary theory of Charles Darwin.

Leonardo anticipated our whole modern natural science, that is to say, so far as this was possible, relying upon the eye alone and without the help of higher mathematics, which were not then known, of the new instruments, and of the mass of observations which had to be mastered by whole generations. For example, this man who died in 1519, who had been brought up in the strict belief of the Church, in a flat earth between Heaven and Hell, knew the system of Copernicus developed some thirty years later. How he gained this knowledge and in what connection it came to him, we know not. For his observations up to the present time, far from being all deciphered, and published, are for the most part aphoristic, often forming an unsolvable tangle of the most various thoughts, jotted down in the midst of, or under or across his sketches, or on the back of his sheets of drawings—thoughts often occurring to him in the midst of his paintings, which he evidently seized in a hurry, in order to use them elsewhere.

In Leonardo's writings we find no astronomical system. Yet on one sheet, under a number of mathematical calculations, we find written in unusually large letters, *il sole non si muove,* the sun does not move, not another word. Here we have clearly a sudden inspiration. But Leonardo is no visionary; he was throughout a positive intellect, never weary of seeking the *certezza delle scientie,* certainty of the sciences, by the strictly empirical and mathematical road. *Sperientia e' commune madre di tutte le scientie e arti,* experience is the common mother of all the arts and sciences, and *nissuna humana investigazione si po dimandare vera scientia, s'essa non passa le matematiche dimostrazioni,* no human investigation can lay claim to being true science, unless it can stand the test of mathematical demonstration. Experiment, therefore, and calculations must be brought into court as tests of the correctness of any assumed fact. In the same way on other sheets we find a succession of investigations and deductions all encircling this central idea of a stationary sun and an earth which is in motion.

Take, for instance, the important recognitions, *come la terra non e' mel mezzo del cerchio del sole, ne nel mezzo del mondo,* that the earth is not in the centre of the sun's orbit, not in the centre of the universe.

CIRCULATION OF THE BLOOD

If now we turn our attention from the movements of the constellation to the hidden movements of the body, we find that Leonardo with the help of a like magical power of vision suspected, or even had a clear idea of the circulation of the blood. Leonardo speaks of *il continuo corso che fa il sangue per le sue vene.* The continuous course of the blood racing through its veins, and over and above this that the blood flows back to the heart, *il sangue che torna indietro,* differs from that which, when the blood is driven out, systole,

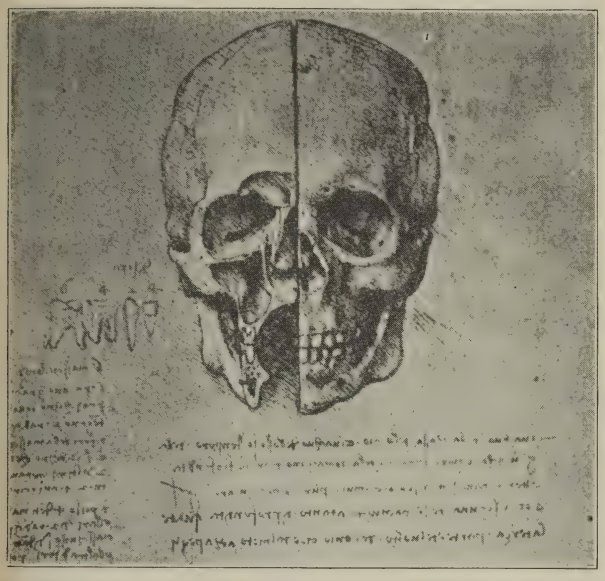


Fig. 3.—Study of a skull in section to show the bony cavities of the face.

closes the valves of the heart, *che riserra le porte del cuore.*

These words suffice to prove a deep insight into the mechanism of the circulation, which at that time was unsuspected and *not discovered* until a century later: for Leonardo knows that the blood runs an uninterrupted course through the veins, he knows that it proceeds from the heart, and finds its way back to the heart, and he makes a distinction between the venous blood and the arterial blood. And here we must bear in mind that the most important works of Leonardo in this connection as in others, are up to the present unpublished. They lie idle in the dust of libraries (2).

Gabriel Séalles (3) discussing the circulation of the blood as found in Leonardo's manuscript, Leic 2/ro J.P.R. II 849(a), says: "Leonardo compares the circulation of the blood to the movement of the water in the interior of the earth. He says, "The water goes from the rivers to the sea and from the sea to the rivers covering always the same circuit. Water is forced from the extreme bottom of the sea to the pinnacles of the mountains where, finding the veins blocked, returns by the shortest way to the low sea, again it rises by the ramified veins, then rebounds, coming or going from top to bottom, from side to side, and from front to back (H 101 V°). In this perpetual movement "it does like the blood of the animals which always moves departing from the sea of the heart and rises to the summit of the head; then if the veins are torn as one sees a vein broken on the neck, all the blood of the lower parts rises to the height of the broken vein."

M. Richer, who thoroughly and seriously studied Leonardo's manuscripts, writes: "From this passage it is evident that Leonardo not only suspected in a general way the circulation of the blood but that he had the clear and right conception of it."

William Harvey is generally credited with the discovery of the circulation of the blood. In 1628 he published at Amsterdam his *Excercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus.* It is not generally known, however, that in 1599 he went to Padua, then the most celebrated school of medicine in Europe, and attended lectures on anatomy, surgery and other medical branches.

He took the degree of M.D. and returned to England in 1602. He was to all intents and purposes an Italian physician and it does not require a stretch of imagination to see that he probably had access to Leonardo's manuscripts from which he might have drawn inspiration and ideas on which to elaborate his theory on the circulation of the blood.

LEONARDO THE ANATOMIST

As an anatomist (4) Leonardo applied to anatomy his constant method. He neglected the books of the Arabs and of the Greeks. To know the human body he observed. His object of study was the cadaver.

Anatomy occupied all his life. His first manuscript appeared in 1489 and his last in 1515. In the preface he enumerates the requirements one should have in analyzing the human body and how to arrive at conclusions. It is the language of a competent man who knows all the delicacies of his art.

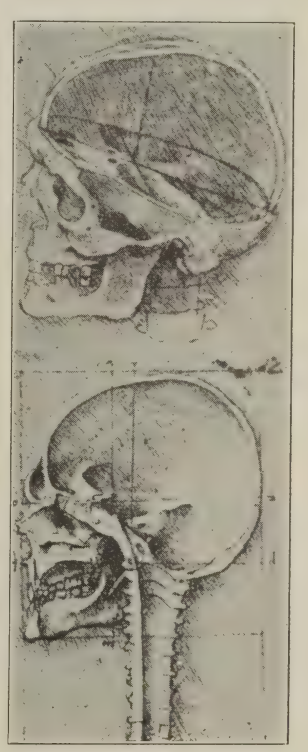


Fig. 4.—Studies of a skull in median section.

The plan of his treatise is greater. He described the uterus and studied the fetus. This is the beginning of embryology. He passes to the growth of the baby and the laws regulating his progress. Finally he arrives at a description of male and female adults. Different because of age and sex, all individuals of the species are made of the same elements, same tissues and same organs. He studied what is found in all the bones, muscles, and tendons, veins, and arteries, nerves, viscera. He studied the eye, the ear, and other organs of sense.

Mr. Jean-Paul Richter, who has consulted the Windsor manuscripts, gives in his bibliography some captions of the treatise on anatomy, such as: The Skull; The Skull and the Teeth; Measurements of Man; The Uterus; Its Veins and Nerves; The Geni-

tal Organs; The Muscles of the Leg; Muscles Which Move the Lips and Tongue; Trunk of All the Nerves; Lungs; Heart; Bloodvessels; Intestines; Stomach; Mesentery.

His last two books are a wonderful study of the

Fig. 1.—Studies of the deltoid muscle of the shoulder in various aspects.

heart—*l'impeto del sangue—la rivolutione del sangue mell' anteporta del corde,* demonstrating the circulation of the blood which was a century later described by William Harvey.

THE HEART

Leonardo made a profound study of the heart. "The heart," he says, "has the most powerful muscles. I have described the situation of the muscles which descend from the base to the apex and the situation of the muscles which originate in the apex and extend to the base." (G IV°) That he knew the structure of the heart thoroughly there is no question. Knox, the distinguished English anatomist, who studied Leonardo's original manuscripts, states that the drawings of the heart valves, especially the semilunar and aortic valves, imply a just idea of their function. Leonardo made a reflux of the blood from the ventricles into the auricles.

NERVOUS SYSTEM

On the nervous system Leonardo made some accurate observations. On the reflexes he says: "The nerves act by themselves without orders from other functions of the mind . . . one sees paralytics with their muscles, such as the head and hands, move without the permission of the mind." (W. An II 202 r°)

THE EYE

But the study of picturesque art and sciences lead Leonardo above all to reflect on the function of the eye. "The eye," he says, "has been defined by a number of authors, hitherto in a way entirely different from mine." On the nature of sight Leonardo speaks thus:

"I say that sight is exercised by all animals through the medium of light; and if against this any one should instance the sight of nocturnal animals, I would say that these in exactly the same way are subject to the same law of nature. For, as one may readily understand, the senses, when they receive the images of things, do not send forth from themselves any actual power; but on the contrary the air, which is between the object and the sense, serving as a medium, incorporates within itself the images of things, and by its own contact with the sense presents them to it, if the objects either by sound or smell project themselves to the eye or the nose by virtue of their incorporeal

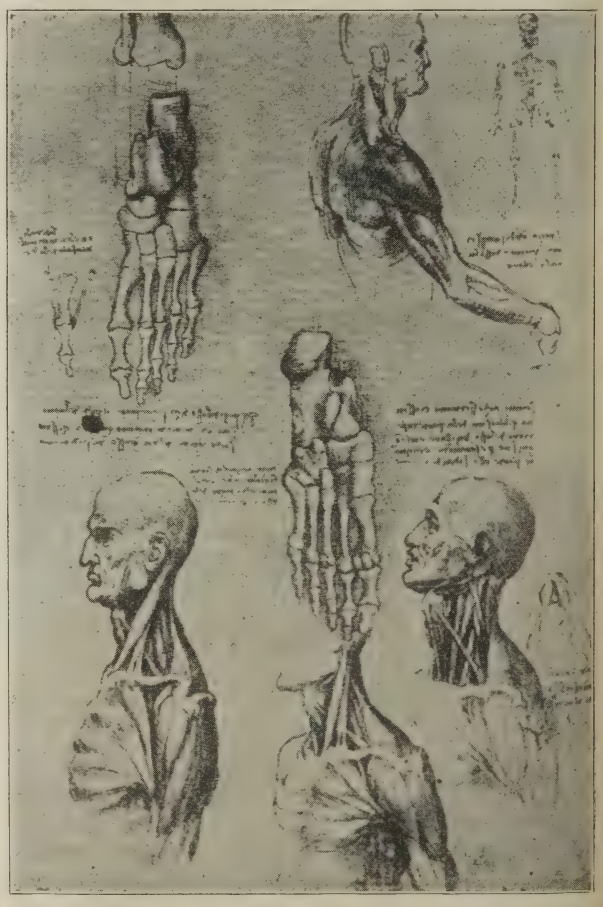


Fig. 2.—Studies of the anatomy of the neck and of the bones of the foot.

powers. Here the light is not necessary, nor is it made use of. The forms of objects do not enter into the air as images unless they are luminous; this being so, the eye cannot receive the same from that air which does not contain them, but only touches their

surface. If you wish to speak of the many animals which hunt their prey by night, I answer that when that small amount of light sufficient for them to see their way fails them, they avail themselves of their powers of hearing and smell which are not impeded by the darkness, and in which they are far in advance of man. If you watch a cat in the daytime leaping among a lot of pieces of crockery you will see that these will remain whole; but if it does the same by night it will break a considerable number. Night birds do not fly unless the moon is shining either full or in part, but their time of feeding is between the hour of sunset and the total darkness of the night. No substance can be comprehended without light and shade; light and shade are caused by light." (C. A. 90r. b.)

"Since the eye is the window of the soul, the latter is always in fear of being deprived of it, to such an extent that when anything moves in front of it which causes a man sudden fear, he does not use his hands to protect his heart, which supplies life to the head where dwells the lord of the senses, nor his hearing, nor sense of smell or taste; but immediately the affrighted sense, not contented with shutting the eyes and pressing their lids together with the utmost force, causes him to turn suddenly in the opposite direction; and not as yet feeling secure he covers them with the one hand and stretches out the other to form a screen against the object of his fear." (C. A. 119 v. a.)

Leonardo was the first man to discover the true nature of the eye. Before Cardan (1550) he had observed the dark chamber nature of the eye. The real discoverer, however, of the dark chamber, was another illustrious Italian who preceded him, L. Battista Alberti.

ON ARTERIOSCLEROSIS

Ambassador Caetani thus quotes Leonardo on arteriosclerosis:

"The death of old men, without fever, is caused by the veins which, going from the spleen to the liver, have their skin become so thick that they close and no longer give passage to the blood which nourishes them. The continued flow of blood in his veins causes the veins to become thick and callous so that at last they close and prevent the blood from flowing. An old man, a few hours before his death, told me that he had lived a hundred years and did not feel any bodily ailment other than weakness, and thus while sitting upon a bed in the hospital of Santa Maria Nuova at Florence, without any movement or sign of anything amiss he passed away from this life. And I made an autopsy in order to ascertain the cause of so peaceful a death, and found that it proceeded from weakness through failure of blood and of the artery that feeds the heart and the other lower members which I found to be very parched and shrunk and withered; and the result of this autopsy I wrote down very carefully and with great ease, for the body was devoid of either fat or moisture, and these form the chief hindrance to the knowledge of its parts. The other autopsy was on a child two years old, and here I found everything the contrary to what it was in the case of the old man."

(To be continued)

Contributors to the Science of Medicine

William Cullen

William Cullen, a contemporary of the Hunters and born not far from the village in which they were born, was as great a surgeon, a better teacher and quite as original a thinker as William Hunter, although he cannot be compared with John Hunter. Perhaps he is not so well known as the Hunters because he never left Scotland, but certainly he is one of the foremost of that brilliant band of Scotsmen who have added lustre to the name of Scotsman and to the medical and surgical professions.

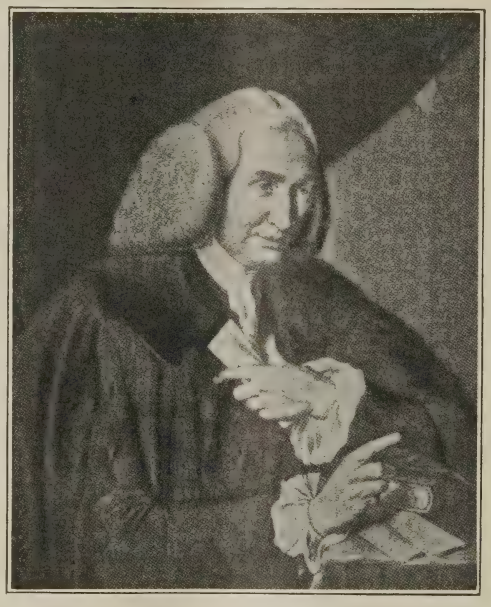
William Cullen was born in 1712, in Lanarkshire; his parents were in humble circumstances. After serving, as was the general custom of the times, an apprenticeship to a surgeon-apothecary in Glasgow, he became, as did another eminent Scotsman, Tobias Smollett, a surgeon or surgeon's mate to a merchant vessel. As a matter of fact Smollett served on a man of war, while Cullen was in the lowly position of surgeon to a merchant vessel, trading between London and the West Indies. However, his life at sea was short, he returned soon to his own district, and practised among the rustic inhabitants of the parish of Shotts, a region proverbial even in Scotland, for bleakness and poverty. There an accident favored Cullen and probably gave a color to his future fortune. The Duke of Argyle was staying in the neighborhood, and was anxious to do some chemical investigations, but some of the necessary apparatus were lacking. His host recollected young Cullen as a person likely to supply the deficiency. He was invited to dinner to meet the Duke and established himself in his good graces. Soon after this he removed to Hamilton where he made satisfactory headway, as at the age of twenty-seven he was appointed chief magistrate of the burgh. There he was a general practitioner, and was surrounded by apprentices in his pharmacy.

As said before, William Hunter was a native of the same part of the country and these kindred spirits entered into partnership. Their main ambition, then, was to procure the means wherewith to improve their medical education and position, and in order to further this object it was stipulated that each of them should be alternately allowed to study during the winter in a medical school while the other should continue to carry on the business in the country. Cullen took the first turn and passed the winter in Edinburgh. William Hunter chose London as his

place of study and the choice proved so propitious that he did not return. Thus ensued a premature dissolution of the partnership, as Cullen was not the man to throw obstacles in the way of his friend's advancement. They remained cordial friends and wrote frequently, although strange to say they never seem to have met again.

Soon after this another stroke of luck occurred to Cullen. The Duke of Hamilton was taken ill suddenly and sent for Cullen. He was attracted greatly by him and procured for him the post of lecturer on chemistry at the University of Glasgow. He shone in this position and became the idol of his pupils. He possessed a singular talent for arrangement which combined with his distinct enunciation, his vivacity of manner, and above all his thorough knowledge of his subject, rendered his lectures interesting in a degree hitherto unknown in Glasgow. His practice increased daily, and when a vacancy occurred in 1751, he was appointed by the King to a professorship of medicine.

In the meantime the authorities of the University of Edinburgh were very anxious to strengthen their medical teaching staff and their attention was directed to the rising fame of Cullen and when their professor of chemistry left this position Cullen was invited to take it. In 1756 he resigned all his offices and positions in Glasgow and came to the city which he helped to make the scene of his future triumphs. Chemistry had been neglected somewhat in Edinburgh and Cullen put forth his utmost powers to restore it to its rightful place. So successful was he in this attempt that more students attended the chemistry lectures than attended any other course, except that of anatomy.



WILLIAM CULLEN
(From Garrison's *History of Medicine*)

While professor of chemistry he delivered also during several years clinical lectures at the Edinburgh Infirmary. Alston, who was professor of materia medica, died in 1863, and Cullen succeeded him, and although in the middle of the chemistry course, persevered with his new subject to such good effect that while only eight or ten pupils had entered under Alston, more than one hundred enrolled under Cullen.

On the death of Dr. Whyte, Cullen rose yet another step and delivered lectures on the theory of medicine, ceding his chair of chemistry to Black, his former pupil. Next Rutherford, one of the grandfathers of Sir Walter Scott, disappeared from the chair of practical medicine. For this position Cullen and the great Dr. Gregory, known now chiefly as the deviser of Gregory's powders, were rival candidates. Gregory was perhaps the greatest medical therapeutist that Scotland ever had. It was arranged that these distinguished competitors should alternately lecture on the theory and practice of medicine. Their talents were dissimilar, and the students profited abundantly by the variety and emulation exhibited by these masters of their craft. Gregory was cut off suddenly in the prime of life and Cullen continued to occupy the practical professorship until a few months before his death.

As a lecturer he towered above the other Edinburgh professors of the medical department with the exception of Gregory. A few short notes sufficed to preserve a certain order with Cullen and an ease, a force, and a variety were thus imparted to his matter and his style which few have equalled. His particular illustrations were always fresh, apt, and suited to the occasion of the moment and his elocution was clear and bold. His arrangement was plain to the dullest capacity. He did not so much strive to imbue the student with particular details, as to present him with a general view of the whole subject, to show what had been already attained, to point out what remained to be discovered, and to place him on the road which seemed to conduct to a solution of the difficulties. A rapid outline was first drawn, in which the whole figure started boldly at once from the canvas, distinct in all its parts, and unmixed with any other object; presently he began to trace the picture anew, to strengthen the features, to sketch the distance, and to complete the whole in as perfect a manner as the state of his science would permit.

Cullen was the first to depart from the dictates of Boerhaave from which no appeal at that time had been made. He wrote several books. A small one on physiology, which had a considerable vogue in its day, was translated into French, German and Latin. His *First Lines of the Practice of Physic* appeared in 1784. This was translated into Latin, French, Italian and German. His *Nosology* is regarded as his best work. His *Materia Medica* was translated into many languages.

Cullen died in 1790 in the seventy-seventh year of his age. His appearance was striking and his countenance expressed the power within. He was a man of almost boundless nervous energy.

The Historical Exhibit at the Oporto School of Medicine.—The centenary of the foundation of the Medical School of Oporto was celebrated in 1925 by an historical exhibition which embraced the original royal decree authorizing the foundation of the school, many books, documents, etc., portraits of the distinguished professors and a notable collection of objects of historical interest from the excellent historical collection of Dr. Vittorino.

A sympathetic summary of the contents of this monograph with reproductions of the decrees, authorizing its foundation, is contributed to the fall number of the *Annals of Medical History* by Dr. Fielding H. Garrison.

Symposium on Genitourinary Disorders

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Pyelographic Diagnosis of Renal Tumor

MEREDITH F. CAMPBELL, M.D.

New York

Exactly twenty years ago (1906) Voelcker and von Lichtenberg produced the first pyelogram. Since then improvement in all phases of this technic have led to its universal employment.

The pyelographic diagnosis of renal tumors is unquestionably the most interesting and probably the most difficult of urographic procedures. Kidney tumors are characteristically bizarre in their growth and the resulting pyelograms are so variable that discussion of the subject cannot be dogmatic. However, certain rather definite changes are seen in the pelvic outline in most of these cases.

The factors producing these variations from the normal outline are: 1, mechanical by, a, distortion of the pelvis by new growth; b, obstruction to urinary outflow — upper ureter involvement; 2, ulcerative, the result of infection plus sloughing of necrotic involved tissues.

Tumors of the kidney fall into four main classes: neoplasm, polycystic disease, solitary cysts, and inflammatory (abscesses). The latter two classes are rare, particularly renal carbuncle of sufficient size to be radiographically demonstrable.

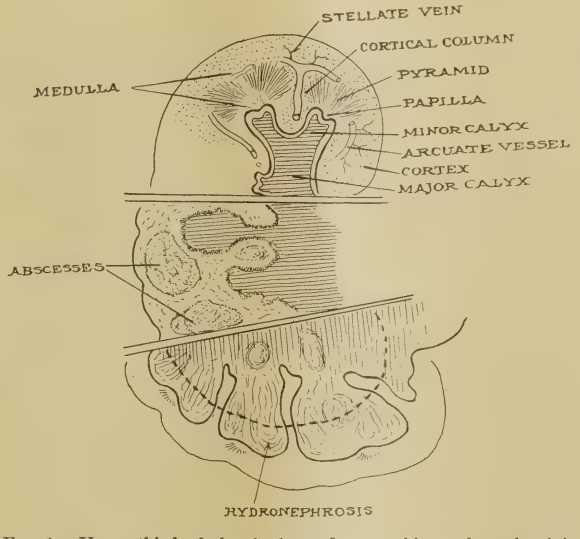

Fig. 1.—Upper third of sketch shows finer markings of renal pelvis. The projection of the papillary processes into the minor calyces produces the "cupping" seen in the normal pyelogram. With dilatation or infection of the pelvis, these markings are the first to disappear. Below are illustrated ulceration and hydronephrosis, conditions commonly associated with renal neoplasms.

Before proceeding to the consideration of the abnormal renal pelvis, let us consider briefly the normal. The finer details, the minor calyces and papillary processes are well shown in the upper third of Fig. 1. With most changes within the kidney involving pelvic outline, alteration or obliteration of these finer details occurs early. The kidney pelvis proper normally gives off two or three major calyces, most often three. These usually subdivide into two or more minor calyces. When two major calyces are present, subdivision into minor calyces is usually more marked, the greatest subdivision occurring at the lower calyx. Some of the more frequently observed types of normal renal pelvic outline are shown in Fig. 2.

The changes in the pelvic outline suggestive of new growth of the kidney are: 1, elongation of the calyces; 2, filling defect of the pelvis; 3, enlargement of the pelvis with or without evidence of alteration of pelvic capacity. All are phases of pelvic deformity. Displacement of the kidney and pelvic axis frequently accompanies tumor.

Elongation of the calyces is the mechanical result of tumor growth toward the periphery of the organ (Fig. 3). The involved calyx (usually one early, more later) is actually compressed by and drawn out with the tumor growth so that the later picture is that of a narrow streak. Rarely are the terminal calyces blunted; on the contrary, they merely fade out. These elongations are of variable length, the longest we have seen was 13.5 cm., an enormous hypernephroma. This is rare, however, as marked infection and ulceration usually intervene ere the growth reaches such size. Occasionally shortening and broadening of the calyces are seen, but this is not the rule with malignant growths. It is more commonly the accompaniment of polycystic disease.

As the tumor enlarges invasion toward the pelvis ensues. If infection and ulceration have not occurred,

the pelvis is compressed or flattened. In event of ulceration, variable degrees of flattening plus an irregular motheaten pelvis outline are seen. Changes in the true pelvis depend on extent of parenchyma involvement and on site of growth—a medullary growth causing earlier pelvic changes than a tumor

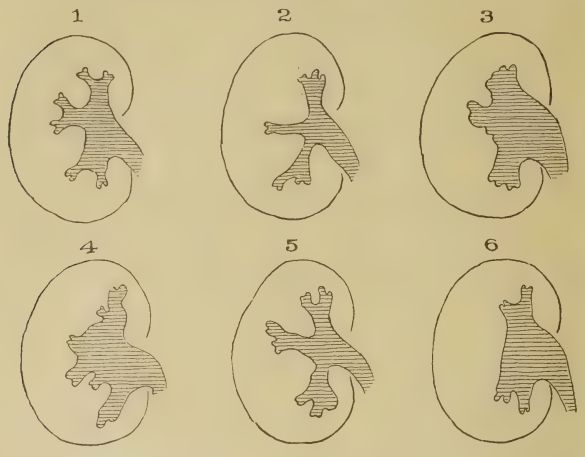

Fig. 2.—Normal renal pelvic outlines drawn from pyelograms. Although showing considerable variation in contour, it will be noted that the finer markings are well preserved in all.

of equal size in the cortex. Infection and ulceration, however, are important factors.

Filling defects of the pelvis occur chiefly with papillary growths of the pelvic wall, only late with parenchymatous tumors. Little change in the calyces

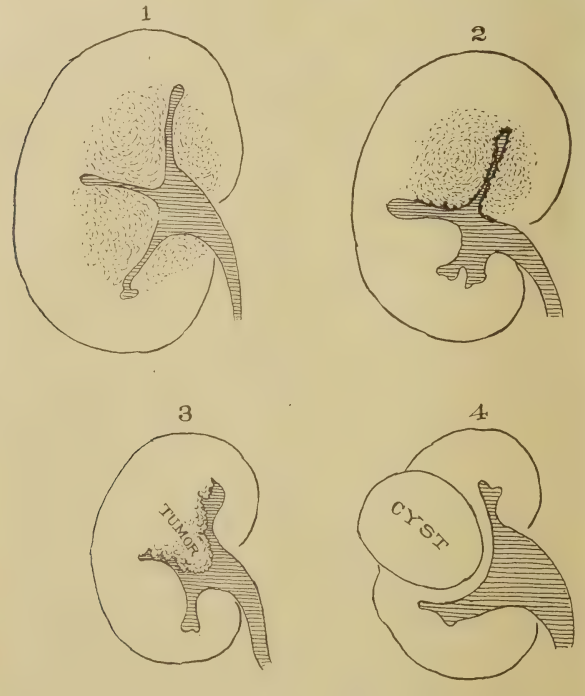

Fig. 4.—Drawn from pyelograms 1, hypernephroma 2, adenocarcinoma 3, papillary carcinoma 4, solitary cyst. Nephrectomy in all cases.

will be found with papillary tumors as a rule. There may be slight compression of the adjacent calyx. When papillary tumors reach such size as nearly to obstruct the true pelvis, intermittent blocking of the pelvic outlet with dilatation is frequent. Then outlines are particularly hazy.

Actual enlargement of the pelvis occurs late and may be the result of sloughing, obstruction, or mechanical retraction by the new growth. Sloughing occurs late in the life cycle of the tumor, is most often due to vascular thrombosis secondary to infection and may be extensive, giving a picture not unlike hydronephrosis in all details except for the marked irregularity and deformity so characteristic of tumor and not seen as a rule with hydronephrosis. It should be noted, moreover, that carcinoma causes sloughing relatively early and extensively, hypernephroma late and little. Ulceration is greatest with sarcoma.

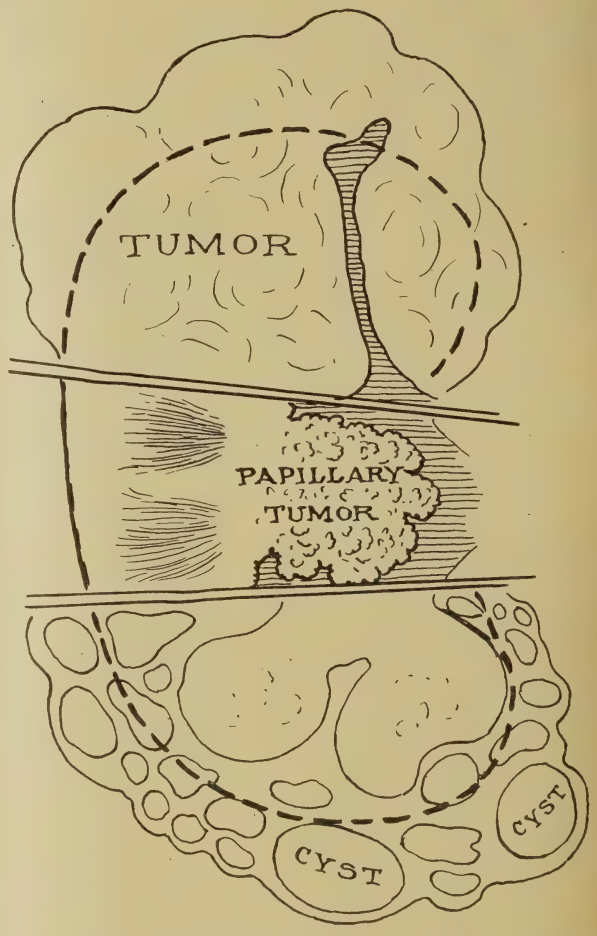

Fig. 3.—Pelvic deformity resulting from parenchymatous, papillary, and cystic tumors. Adjacent calyces are usually normal with papillary pelvic growths.

Obstruction at the pelvic outlet may be due to plugging by débris (slough, blood clot) or more often the actual involvement of the upper ureter by new growth. Here ureter changes are noteworthy. Inflammation causes a dilated ureter; new growth involvement constriction and obliteration.

This obstruction to pelvic drainage entails changes of dilatation in the pelvic outline. Those calyces not involved by tumor growth (if any) are dilated, the greater portion of the true pelvis presents an irregular appearance—motheaten, hazy—all in the presence of great deformity. To repeat, this deformity of pelvic outline is characteristic of all renal tumors malignant or benign, and differentiates neoplastic dilatation from that of simple hydronephrosis.

Of the kidney tumors, hypernephroma is by far the

most common. It usually begins in the upper pole of the organ, metastasizes early and freely, and may cause great suffering although cachexia appears late. Because this form of tumor shows necrosis late, extreme, regular deformity of the pelvis is found; the

Fig. 5.—Hypernephroma with globular streaking of the calyces. Nephrectomy.

streaking of the calyces may be pronounced. Clinically, a mass with hematuria and loin pain in the renal area, suggest tumor. When coupled with a pyelogram showing spider like calyces and great pelvic deformity, hypernephroma is the probable diagnosis.

Renal carcinoma is less frequently seen and is char-

Fig. 6.—Hypernephroma with dilatation above, compression of the mid pelvis and diffuse infiltration of the iodide media below indicative of ulceration and necrosis. Nephrectomy.

acteristically a rapidly growing lesion showing early and extensive necrosis. The pyelogram is essentially one of great pelvic deformity with the irregular furred or motheaten outline characteristic of ulceration. As has been pointed out by others, the diagnostic triad—pain, hematuria and tumor—are not as marked as with hypernephroma. Cachexia is often extreme, appears relatively early and with a brief his-

Fig. 7.—Kidney of above case, Figure 6. Note marked involvement of lower pole corresponding to mottled area in pyelogram.

tory of illness may be the outstanding clinical feature.

Papillary growths either benign or malignant are less frequently observed than either hypernephromata or carcinomata. Often hematuria is the only symptom. The pyelogram may show marked filling defect (occasionally complete obliteration of the true

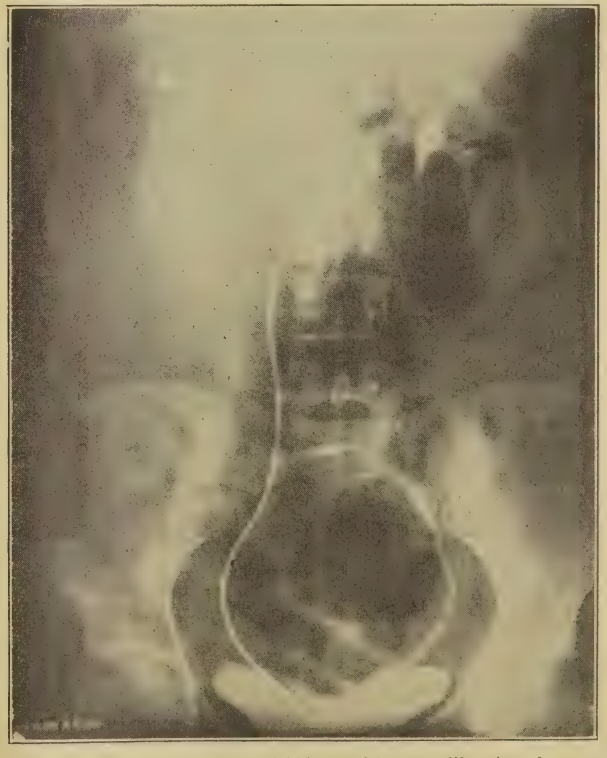

Fig. 8.—Adenocarcinoma of kidney with some dilatation above and obliteration of pelvis in lower half by new growth. Normal pyelogram on left side.

pelvis) with or without pelvic changes secondary to ureter obstruction by the growth.

Other neoplasms, sarcoma, fibromata, etc., of the

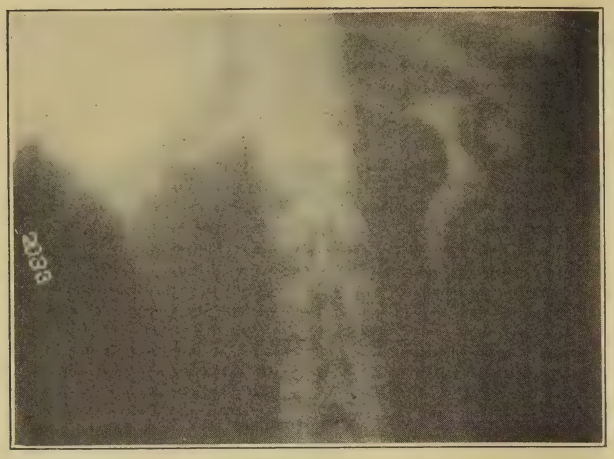

Fig. 9.—Adenocarcinoma involving lower pole of kidney with obliteration of the pelvic outline. There is some dilatation of the remaining pelvis and upper calyces.

kidney are rare. It is to be noted, however, that greatest pelvic deformity and destructive changes are caused by sarcoma.

POLYCYSTIC DISEASE

The pyelogram of renal polycystic disease is too variable to be described specifically. Changes are most inconstant. Relatively little elongation of the calyces is seen, rather are they shortened, broadened, or dilated with blunting of the minor calyces. This

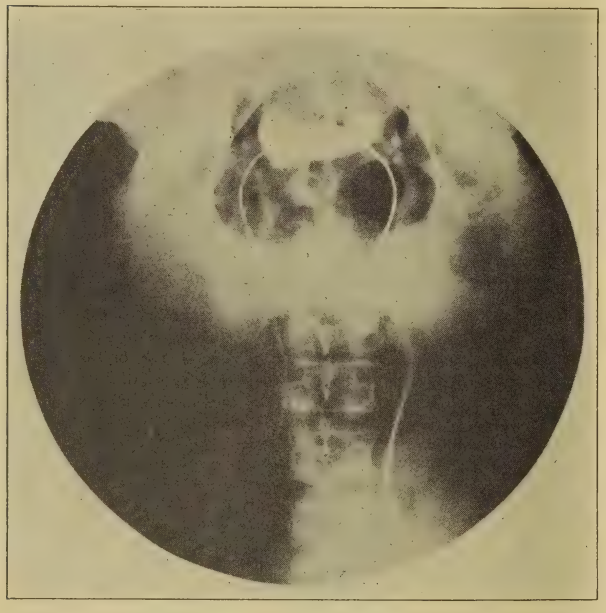

Fig. 10.—Papillary carcinoma with complete obliteration of renal pelvis. There is some dilatation of upper ureter, probably inflammatory.

dilatation may be round, oval, or crescentic and the appearance of round or crescentic calyces in the presence of a deformed or irregular true pelvis is suggestive of polycystic disease. Changes in the true pelvis are most inconstant. Polygonal dilatation is the rule. It has been asserted that pelvic contraction does not occur but we have recently examined three polycystic kidneys in which there was complete occlusion of the pelvis by cystic growth and compression. If infected, the pelvis shows a hazy outline.

Clinically the patient usually complains of loin pain; occasionally of a mass. Sometimes hematuria is noted; sometimes there are no symptoms until signs of renal failure appear. Many patients we have seen with this condition first noted the tumor themselves.

Fig. 11.—Nephrectomy specimen showing large intrapelvic growth with little parenchymal involvement. Pyelogram here showed filling defect of pelvis.

SOLITARY CYSTS AND ABSCESSES

Solitary cysts and renal abscesses, especially if adjacent to the pelvis, show a regular sharply defined

Fig. 12.—Polycystic kidney with grossly irregular pelvic outlines, some round, some concentric. Nephrectomy. Patient noted mass before seeking advice.

pelvic deformity—a flattening in the region of the tumor with compression of the adjacent calyces. We have, however, recently seen a pyelogram in a case of solitary renal cyst of the upper pole, the streaking

of the upper calyx and general pelvic contour of which was urographically undistinguished from that commonly observed with hypernephroma. Solitary cysts and renal carbuncles of sufficient size to be urographically demonstrable are rare.

Gross deformity and irregularity of the kidney pelvis may be suggested in a normal pelvis. This may result from a faulty pyelographic technic or mechanical difficulties, either causing incomplete filling of the pelvis. Chief of these mechanical difficulties may be mentioned, 1, stenosis of the ureter—either by inflammatory involvement as stricture—or from extraureteral pressure by tumor; 2, ureter dilatation to the extent that the radiopaque fluid is not retained in the pelvis. An obstructed catheter is passed occasionally.

Of other conditions causing pelvic deformity, perirenal tumor is most common. On the left side, enlarged spleen should be remembered; on the right side, a Riedl anomalous hepatic lobe may confuse. We observed aneurysm of the renal artery once giving symptoms and pyelogram suggestive of tumor. Cysts in the region of the kidney may compress this organ but the pyelographic picture in these cases is that of a kidney pelvis, which is possibly slightly rotated, displaced or flattened, but which shows a normal outline.

Pelvic changes secondary to renal calculus or the accompanying infection are usually explained by the röntgenographic demonstration of the offending stone. Hydronephrosis without tumor usually gives a pelvic outline which shows regularity, dilatation with shortening and rounding the calyces. Hydronephrosis with tumor most frequently shows elongated compressed calyces or the calyces may be absent; the true pelvis is dilated.

Filling defect may be simulated by blood clot or by an atrophic contracted pelvis secondary to an old inflammation. In the latter case, the pelvic outline is regular but smaller than usual.

33 East Sixty-eighth Street.

On Kidney Diseases*

JOHN WILLIAM SHUMAN, M.D., F.A.C.P.
Los Angeles

One cannot think of renalopathies without considering the genitourinary system; kidneys, ureters, bladder, urethra and adnexa. Nephropathies cannot be studied without adequate knowledge of the cardiorenal vascular system. The kidneys are an important link in that chain. Remember the anatomical location of kidneys—for lumbago and sacroiliac disease have been crudely diagnosed as "kidney trouble."

Inflammation is the chief disease of the kidney. Nephritis may be active or passive. The active usually results from toxins, bacterial in origin. Nephritis may be classified as glomerular, parenchymatous or interstitial, according to the part affected. This is a bit unfair, for seldom is one diseased without the others being affected. Acute and chronic nephritis are fair terms. This terminology depends upon the time disease has involved the organs and the compensation which has taken place.

Passive congestion or cloudy swelling, so frequently viewed postagonal, is frequently present secondary to cardiac and hepatic failure. Both this and active congestion give urinary findings, such as albumin and casts, also an increase of blood urea, nitrogen, and creatin. Urinary obstruction (prostatic, etc.), causes renal passive congestion.

Fevers, especially scarlet, cause nephritis from mild to severe grades, because the kidneys eliminate much of the poisons. Focal infection (teeth, very often) is the most frequent underlying cause for the low grade nephritis which goes unrecognized until an acute exciting agent increases its intensity, for example, some severe acute illness, exposure, pregnancy, arsenic administration, and other conditions. Then are developed the signs of renal insufficiency; which may be, from scant urine, first degree pitting of shins, and foul breath—to anasarca, anuria, coma, collapse and perhaps death.

Study the eye grounds. Today with the electric ophthalmoscope no doctor should neglect examining the retinæ. Here the end capillaries can be seen and studied. This is of both diagnostic and prognostic value in cardiorenal vascular disease.

Clinically two types of kidney disease are seen—the dry and the wet. The latter (hydremic) is the anasarca type in which the tissues are water logged; there is a retention of salt and water, for the function of water excretion is impaired, the filter is clogged; and there is little evidence of cardiovascular changes. In the dry type (azotemia) there is lessened urea output (normal excretion thirty c. c. a day) and no edema; the nitrogenous bodies are retained and cardiovascular changes are well marked. However, there are mixed types of these two.

Prognoses referable to heart and kidney disease are more worth while today than ever. Prognosis in kidney disease depends upon:

1. A knowledge of the general clinical conditions, e. g., general weakness, loss of weight (or gain if hydremia), headache, vomiting, other gastrointestinal symptoms, convulsive seizures and other uremic symptoms, as well as various other conditions.

2. The physical condition of the cardiovascular system. Here worthy of mention is that high blood pressure is caused by overactivity of the sympathetic nervous system, stimulating the glands of internal secretion, causing a too high blood pressure, which injures the heart and bloodvessels. The kidney, being little more than a well constructed mass of bloodvessels, becomes greatly damaged. Later the bloodvessels and kidney help maintain a higher than normal blood pressure—further weakening the left heart.

*Fifth of six clinics held for Seniors of College of Medical Evangelists, Los Angeles, at Los Angeles General Hospital, April 15, 1926.

3. Biochemical tests. Some cases may be bordering on fatal termination without marked physical signs. So study these renal tests: a. General condition and symptoms and including the eyegrounds. b. The heart, and blood pressure. c. Blood urea; normal 20-40 mg. per 100 c. c. One test is not good—see if it is persistently high. It may be due to meat ingestion. Blood creatinin—elevation means serious impairment of elimination. Over five often means fatal prognosis. d. Urine; for not only albumin and casts but also for red and white blood cells. Increase in night urine means lack of kidney elasticity—works overtime at night to keep up elimination. With such a kidney the specific gravity is about constant.

If urea in blood and urine is both high, kidneys are functioning well. In the aged blood urea may be 50 mg. per 100 c. c. Prognosis is not hopeful if it is that high in the young and over seventy in the old. High blood pressure with advanced kidney changes indicates a hopeless prognosis.

The amount of albumin passed is no criterion of kidney efficiency. There is often much damage when there is but a trace. Albumin may mean globulin of blood, cathartics, pyuria. Also in adolescent children, following violent exercise. Do quantitative albumin tests, for if it decreases this is of good prognostic value. I put confidence in blood and urine urea tests and phenolsulphonephthalein. But all have fallacies.

Septic emboli do lodge in the end arteries of the kidney causing from minute to large abscesses. Some heal and are infarcts. Some form stone or calculus which may in time be dislodged into the pelvis and try to pass through ureter causing renal colic with its unmistakable agonizing, dull knife cutting like, radiating pain, hematuria, cold sweat, pallor, etc.—relieved by passing the stone or the administration of morphine.

A large kidney area may be due mainly to hydronephrosis, hypernephroma, perinephritic abscess or pyonephrosis. Tuberculosis is a frequent cause of the latter. In an adolescent, frequent micturition, increasingly so at night, and pus in the pan specimen speak for renal tuberculosis until it can be ruled out. It can only be ruled out by repeated microscopic examinations for the tubercle bacillus. Guineapig inoculation is helpful but slow.

Painless hematuria means malignancy until it can be ruled out. In both of these conditions the cystoscopic examination and segregation of urine is vastly important. Pyelography is often helpful.

In closing, cystitis is never primary—its cause may be from above, about, or from without.

The following illustrative case was reported by Dr. G. W. Harmon, an intern:

Case.—No. 242313, a sixty year old male Jew, peddler, admitted February 3, 1926, complaining of swelling of ankles, legs, hands and face, general weakness, frequent urination, shortness of breath and joint pain. Five years before he had had a similar attack.

A careful examination revealed focal infection of teeth and tonsils; heart enlarged to the left; anasarca, a moderate amount; proliferative arthritis of cervical, upper dorsal vertebræ and knee joints; urine contained albumin 29 to 168 per cent. and glandular casts plus 2, specific gravity 1012 to 17, few pus cells; prostate overfirm but not obstructing; blood pressure 178-104; internal hemorrhoids; liver, one finger below the costal margin; blood, hemoglobin 55 per cent., red blood cells 4,400,000, white blood cells 10,800; polymorphonuclears 60 per cent.; blood sugar 100.0, nonprotein nitrogen 30; preformed creatinin 1.5; uric acid 3.0.

Diagnosis: Senility with hypertensive cardiorenal vascular syndrome. Treatment: Rest and care.

2007 Wilshire Boulevard.

The Genesis, Occurrence and Management of Fulminating Uremias

ROLFE FLOYD, M.D.

New York

High nonprotein nitrogen figures not infrequently catch both the physician and the surgeon unawares and startle with their sinister significance.

Antecedent low readings in these cases, previous to an operation or to an illness without renal symptoms, make such reports the more astonishing because in chronic nephritis the rise of nonprotein nitrogen is apt to be a very gradual one.

These unpleasant surprises occur because the several causes of high blood nitrogen are not sufficiently kept in mind.

GENESIS

There are three principal ways in which considerable increases of nonprotein nitrogen occur in the blood stream; the first is physiological, the second and third are pathological.

1. When more protein is broken down in the body in twenty-four hours than usual, its waste products have to be carried from their sites of production to their only adequate channel of escape, that is, to the kidney. So the blood comes to be surcharged with nitrogen waste products until their surplus is disposed of. Such elevations of nonprotein nitrogen occur in pneumonia and after eating excessive amounts of protein food. They seldom reach one hundred mg. per one hundred c.c. of serum, and they recede as soon as the flood of extra nitrogen waste abates.

2. The second way that high nonprotein nitrogen occurs is so as to provide an abnormally high stimulus for an abnormally weak function. The presence of nitrogen waste bodies in the blood stream is the stimulus that makes the kidney draw them from the blood and the higher their percentage in the blood the faster the kidney excretes them. A percentage represented by about thirty mg. of nonprotein nitro-

gen is enough to make the normal kidneys excrete nitrogen waste at the same rate as it is poured into the blood stream and avoid its accumulation beyond the normal amount in the blood and other tissues. When this particular renal function weakens in disease, compensation occurs through increase of the nonprotein nitrogen in the blood, thus augmenting the stimulus enough to drive the weakening kidney to excrete as much nitrogen waste in twenty-four hours as it did when healthy. In this way a nitrogen balance is maintained, but at the expense of an increase of nitrogen waste in the body. All goes well till the nonprotein nitrogen reaches percentages where its unknown toxic components begin to poison the patient and then a vicious circle soon results in death.

3. The third way that high nonprotein nitrogen occurs is because of failure of the kidney's power to concentrate urea in the urine, or, what amounts to same thing, because of insufficient urine volumes. The normal human kidney can put from thirty-five to fifty grams of urea into one litre of urine, at the most, that is from three and five tenths per cent. to five per cent. Many normal kidneys cannot do so much and in disease this function often fails markedly, so that ten grams of urea, or less, per litre, becomes the maximum. One litre is an ordinary twenty-four hour volume and from ten to twenty grams an ordinary twenty-four hour production of urea, so the normal margin of safety is not great. Infections and operations depress this renal concentrating power, often reduce urine volume and regularly increase the production of nitrogen waste, so that volumes of half a litre, maximum concentrations around one per cent., and twenty-four hour urea productions of twenty grams are not at all unusual coincidences. The kidney can then only put five grams of urea into the half litre of urine and retention will progress at the rate of fifteen grams every twenty-four hours.

While the first and second kinds of nonprotein nitrogen elevation contribute to fulminating uremias, it is this third mode of production that is principally responsible for them. The shocking suddenness of these cases is all the more unexpected because the particular renal function whose failure causes them, i. e., concentrating power, is seldom adequately tested. The dye test and the Ambard or Van Slyke constants give direct information only about the power of the kidney to draw waste matter from the blood; they do not reveal the kidneys' ability to concentrate urea in the urine. It is not necessarily true that these two renal nitrogen functions, i. e., extraction from the blood and concentration in the urine, are both damaged in every renal failure, certainly not both to the same extent, so that testing one does not give sufficient information about the other.

On the other hand, the general reliance on specific gravity as a measure of the kidneys' ability to concentrate nitrogenous waste is far from justified. Persistently low and fixed gravities occurring when the fluid intake is low and when edema is not being absorbed, do mean weak concentrating power. But low gravities in single specimens or even in twenty-four hour collections when the fluid supply is not controlled have no such significance. These facts, though often forgotten, are generally recognized, but it is not so generally known that very fair gravities do not necessarily mean fair concentrating power. When the blood nonprotein nitrogen is well over one hundred mg. and the urine volume very scanty I have seen gravities of 1015 associated with less than half of one per cent. of urea in the urine (i. e., less than five gm. per litre). When information about concentrating power is desired, the specific gravity should always be controlled by testing the percentage of urea in the urine.

If the nonprotein nitrogen is high, above seventy mg., and the urine volume not over one litre, the urine content of urea reveals the maximum concentrating power. If the nonprotein nitrogen is not high there are two ways of discovering the maximum concentrating power; either by reducing the urine volume, or by raising the blood nitrogen. Volhard employs the first, Ambard and some American workers the second. As either plan takes time, such tests are very generally neglected.

CLINICAL OCCURRENCE

It is evident from what has just been said about their modes of production that such sudden elevations of nonprotein nitrogen will not be typical of any particular form of kidney trouble, but will be met in many different clinical conditions, where low urine volumes and weak concentrating power ocur together. If, at the same time, the nonprotein nitrogen is already elevated to drive a weak kidney or if coincident overproduction of nitrogen waste is taking place, the uremia will obviously be augmented by these factors.

Persistent vomiting, the anurias of active renal inflammation and of bichloride poisoning, the postoperative state, retention of urine in the bladder, and high intestinal obstructions are some of the more important conditions in which rapid increase of nonprotein nitrogen ought always to be watched for.

In persistent vomiting from whatever cause the urine should be measured. Attention is apt to be so focussed on the relief of the vomiting that the need of fluid is temporarily neglected and the possibility of a coincident weak renal concentrating power entirely omitted from consideration. I recall a case where the patient vomited for a week or ten days with gastric ulcer. A nonprotein nitrogen of one hundred and fifty mg. was then found. The kidneys showed no serious disease and the nonprotein nitrogen fell to fifty mg. in a few days on simple increase of urine volume.

In acute nephritis or acute exacerbations of chronic nephritis the urine may be reduced to a few ounces in twenty-four hours or it may even be completely suppressed and then the nonprotein nitrogen rises with startling rapidity. In such cases both the ability to draw urea from the blood and the ability to concentrate it in the urine are lessened, coincident with the failure of urine volume, so the rapid increase of nitrogen waste in the body is easy to understand. The nonprotein nitrogen in these cases, however, is generally closely watched because the symptoms direct attention to the kidneys.

In bichloride cases the anuria often results in rapidly progressive nitrogen retention which apparently causes or largely contributes to the frequent fatal termination. There are two circumstances,

however, that have confused the understanding of uremia in bichloride cases. The first is that the urine often begins to flow freely again by the end of a week or so, but the patient dies of uremia just the same, poisoned by waste already in the body, which the regenerating kidney cannot exhaust fast enough. The second is that many deaths from bichloride are not due to uremia or are not due to this alone and nonprotein nitrogen readings around one hundred mg. or less have often been found in fatal cases. It must be remembered that bichloride may kill in other ways than by causing uremia, notably by the colon lesions, so that we are altogether unwarranted in concluding that a patient with bichloride poisoning that has anuria and dies is necessarily killed by nitrogen retention.

The sudden uremias that occur after operation are perhaps the most important because they are the ones for which the most can be done. It has long been known that general anesthetics irritate the kidney, and recent work has shown that they depress the renal concentrating power. Fluid intake by mouth is often greatly reduced for a few days after operation and urine volumes of less than half a litre are not at all unusual. An extra amount of nitrogen waste is also apt to be produced in the operative field. These conditions not infrequently combine to rapidly raise the nonprotein nitrogen to high figures, and the danger is sometimes not realized, till the load of poison is too great to be successfully reduced. Fatalities of this kind have occurred often enough to make surgeons realize the danger of postoperative uremia and to guard against it by forcing fluids. This procedure is excellent and life saving but some surgeons do not yet quite understand just why the nonprotein nitrogen rises so fast. If renal concentrating power were tested before every major operation it would make the handling of power operative uremia more individual and more effective.

Sudden and excessive rises of nonprotein nitrogen associated with an equally sudden and excessive fall in the blood chloride have recently been observed in cases of high intestinal obstruction. While the genesis of these changes is still largely obscure, the vomiting and the blocking of the normal channel of water absorption must result in low urine volumes and add this factor to the others, that cause these large accumulations of nitrogen in the blood. Just how much uremia contributes to the symptoms and death in this condition in also not yet known.

When urine is produced by the kidneys but retained in too large amounts and too long in the bladder and ureters, on account of a mechanical block in the lower urinary passages, large amounts of nonprotein nitrogen may rapidly accumulate in the blood. Such uremias often prove fatal. They also constitute a major contraindication to the operation which alone can relieve the underlying condition. Their reduction requires an understanding of the way they are produced, but their genesis is not as simple as seems at first sight. Reduced urine volumes cannot alone be responsible, for urine is still produced by the kidneys, and in many cases a considerable volume dribbles out. Even when the urine is regularly drawn the nonprotein nitrogen may remain obstinately high. The renal concentrating power, while sometimes very low, is often not sufficiently reduced to alone cause the uremia, the urine containing ten or fifteen gm. of urea per litre. Back pressure of urine has been shown experimentally to diminish the secretion of water and urea by the kidney and doubtless is a factor in many of these cases, but, as just stated, some of these kidneys produce fair volumes of urine containing considerable quantities of urea, so back pressure cannot be the only cause. There is probably still another factor at work in these urine retention uremias. Many of the nitrogenous waste bodies are highly diffusible, urea especially so, so they are found in nearly equal concentrations throughout the body fluids and tissues. The membranes lining the urinary tract are the only ones in the body impermeable to nitrogen waste. It is quite conceivable that this special function may be deteriorated or suspended through distention, through inflammation, and through continuous contact with urine, so that resorption of nitrogen waste through the walls of the ureter and bladder may help to increase the nonprotein nitrogen in the blood.

In prostatic, vesical calculus, bladder tumor and urethral stricture conditions, then, the associated uremia is probably produced by varying combinations of four factors; viz., insufficient volume, failing concentrating power, back pressure and resorption.

MANAGEMENT

These fulminating uremic conditions, if untreated, regularly soon destroy life, but wise management not infrequently succeeds in preventing or even in reducing them. So the outlook in these cases is quite different from that in chronic nephritis with slowly but steadily rising nitrogen figures, where treatment can accomplish so little. Success in treatment depends on an accurate understanding of just how the uremia has been produced in each case and on knowing which renal function must be husbanded and which may be driven to compensatory activity.

There are two procedures that form part of the treatment in all these cases.

First, all nitrogen intake should be stopped, so that no addition from outside will be added to the overload of nitrogen waste already in the body. If, however, the treatment has to be prolonged beyond one or two weeks, minimum protein requirements should be supplied.

Second, the skin and the bowel, which constitute the accessory channels of nitrogen elimination, should be kept active. Sweating can be accomplished by the hot pack, the hot air or hot water bath, and by pilocarpine. The bowels must be kept open but I do not believe that the advantages of a constant diarrhea make up for its reduction of urine volume and for the weakness it induces.

In the uremias that occur after persistent vomiting or any cause that has so altered the fluid exchange as to produce continuously low urine volumes the chief indication is to increase the amount of urine, and the only way to accomplish this is to introduce more fluid into the body, either into the stomach, or into the veins, or under the skin, or into the rectum. Putting it in through a duodenal tube is an excellent plan if the condition of the stomach permits keeping the tube in place, for there is no channel of entry that can take care of as much fluid with as little disturbance as the wall of the small gut.

Whatever plans of fluid administration are followed the important thing to watch is the urine volume, for no matter how much fluid is given it can have no effect on the uremia unless large amounts of urine result. It is also important to determine the percentage of urea in the urine and its total twenty-four hour output for this gives information about the effect of the increasing urine volume on the uremia. Little is accomplished till an output of at least thirty gm. of urea is attained.

In guarding against postoperative uremia it is essential to obtain information about the kidneys before operation. The routine urine examination does not at all meet the requirements. While albumin, red cells and casts are danger signals that must not be disregarded, a normal urine gives no assurance whatever of normal renal functions.

The blood chemistry at least tells if the nonprotein nitrogen is up before operation and, when it is, precautions are obviously necessary, but it is just the cases where the preoperative nonprotein nitrogen is found within normal limits in which dangerous postoperative elevations are unsuspected until too late.

As already stated, the dye test and the Ambard or Van Slyke constants indicate the kidney's ability to draw urea from the blood but they do not directly reveal its ability to concentrate urea in the urine. These two renal functions often do vary together, so a poor response to the dye or Ambard test does suggest a weak concentrating power and vice versa, but it does not tell how weak the concentrating power is, which is what we most want to know.

If the nonprotein nitrogen is well over seventy mg. and the urine not over one litre in twenty-four hours, the percentage of urea found in urine may be taken as approximating the maximum concentration. If the nonprotein nitrogen is normal, fluid privation until the urine flows at a rate of less than half a litre in twenty-four hours with simultaneous increase of nitrogenous food will cause approximately maximum urea concentration. This result can usually be obtained within a period of thirty-six hours.

If the maximum concentrating power is under two per cent. every precaution must be taken to keep the urine volume up after the operation.

Even if the kidney can put over twenty gms. of urea in a litre, it must be remembered that this concentrating function weakens under strain and is also depressed by septic absorption and by anesthetics so that adequate urine volumes immediately following operation are the best insurance against postoperative uremia. It is not possible, so far as I know, to increase the renal concentrating power, but it is possible to prevent its depletion.

The cause of the uremic poisoning in these cases is not entirely clear. Loss of concentrating power evidently interferes with the elimination of urea but how does it interfere with the excretion of creatinin and other nitrogenous waste products, whose amounts never reach one per cent. in the urine, and why does it retard excretion of the toxic substances which are unknown but whose total amounts are so small in comparison to urea that a very few c.c. of urine should provide ample solvent for their elimination? I know no satisfactory explanation, but when urea is held back in the body through failing renal concentrating power or inadequate urine volume other nitrogenous bodies and the total nonprotein nitrogen collect in the blood in proportion to the urea, and uremic symptoms occur with nonprotein nitrogen figures similar to those encountered in other types of uremic poisoning.

In prostatic cases the high nonprotein nitrogen is often due to several factors, as already explained, and is therefore correspondingly difficult to deal with. Diminution of the concentrating power and of the power to excrete water fully and promptly, together with impaired ability to draw urea from the blood often coexist because of renal deterioration incident to the patient's age, and are all apt to be made worse by back pressure, while the nonprotein nitrogen may also be added to by resorption. It is imperative to raise the urine volume but the increase must be effectively evacuated or more back pressure and resorption will result. Frequent catheterization or the indwelling catheter, on the other hand, are likely to cause epididymitis and further depress renal function through fever and sepsis. The uremia, however, cannot be effectively reduced unless large amounts of urine are both formed and passed, and until the uremia is reduced, the operative risk is extremely great. After operation it is also vital to keep the urine volume up and this has to be done partly in the dark for the urine cannot then be readily measured. The best guide at this time is frequent determinations of the blood nonprotein nitrogen.

The most difficult of these fulminating uremias are those that occur when anuria or pronounced oliguria complicates acute inflammation of the kidneys. They are chiefly met in acute nephritis with scarlet, in bichloride poisoning and sometimes in severe exacerbations of a chronic nephritis. To make the urine flow is the primary indication, for the kidney cannot excrete urea or anything else unless it excretes water. How best to make the urine flow is a point on which very divergent views are held. Some clinicians force fluid intake to drive the kidney to excrete it, others believe that this is the worst thing that can be done and stop all the intake in order to give the inflamed and irritated kidneys as complete rest as possible.

Another point of difference concerns decapsulation. Volhard considers decapsulation imperative by the fourth day of anuria and reports success in over fifty per cent.; though I do not understand that he advocates the operation in bichloride cases.

In this whole group of fulminating uremias pessimism about the outcome and the effect of treatment is not warranted. The rapidity with which they accumulate justifies the hope that may be reduced. It is not infrequent to see nonprotein nitrogens up to two hundred mg. fall satisfactorily. Within the year a severe one occurred with an exacerbation of a chronic nephritis in a brain tumor case. The urine at first was bloody and contained less than half of one per cent. of urea. The volume averaged less than 350 c.c. in twenty-four hours for the first week and then rose but slowly. The nonprotein nitrogen rose from forty-two mg. at the onset to four hundred mg. at the end of ten days, remained at this level for a week and after this fell steadily until it reached practically normal figures at the end of three weeks more.

The slowly rising uremias of late chronic nephritis are almost impossible to reduce but in these sudden ones prompt treatment will often save life.

The Unilateroprevertebral Fused Kidney

With Report of a Case

ABRAHAM SAIKIN, M.D.
New York

Because of negative cystoscopic findings, recognition of fused kidneys without the aid of urography (a term introduced by Morrissey, indicating röntgenography of the urinary tract after it had been filled with an opaque solution) was quite impossible. The majority of these cases were discovered either at necropsy or on the operating table. It is only within the last decade that isolated cases began to appear in the literature, in which the diagnosis was made by urography.

FORMS OF FUSED KIDNEY

There are two forms of fusion of the kidney, namely: 1. The horseshoe kidney in which the fusion occurs either at the upper poles or at the lower poles and the kidneys are placed on each side of the vertebral column, more or less in the normal position.

2. The concrescent kidney of Gerard (1) is one in which the fusion is more or less complete and there is considerable asymmetry of renal tissue with the absence of horseshoe form. Stewart and Lodge (2) classify the concrescent kidney according to its position into three groups:

a. The unilateral fused kidney, in which the fusion takes place on one side of the vertebral column.

b. The prevertebral kidney; here the fusion takes place in front of the vertebral column.

c. The pelvic kidney, in which the fusion takes place in the pelvis.

Recently, Dourmashkin (3) collected seven cases of unilateral fused kidney in which diagnosis was made on living subjects by urography. Since then cases have been reported by Dunavant (4), La-Rose (5), Lowsley, Kingery and Clark (6), Caulk (7), Sexton (8), and Kretschmer (10).

The survey of urograms of the concrescent type of the fused kidney hitherto reported in the literature showed invariably that each one of them belonged to the unilateral fused type, that is, in every instance both pelves were situated on one side of the vertebral column; the ureter crossing the spinal column as it reached the opposite side.

The case which I have presented here is, I believe, the only one on record where the diagnosis of a prevertebral fused kidney was made by a pyelogram on a living subject.

FIG. 1.—A urogram showing the left pelvis and ureter of the fused kidney. Note that the kidney pelvis is situated in front of the vertebral column and that the calyces point upwards and inwards instead of outwards, which is normal. The left ureter emerges from the bladder in a normal fashion and runs towards the median line of the body.

CASE.—Y. T., woman, aged thirty-one, married, born in Russia, was referred to me by Dr. George Schwartz on January 18, 1926.

About February, 1924, patient consulted a surgeon complaining of pain in lower abdomen and sacral region. Patient was operated upon and a large single mass was felt in front of vertebral column, which was retroperitoneal and extended from the fourth dorsal vertebra to third sacral segment. A considerable portion of the mass could be traced to the right of the vertebral column and downwards towards the sacrum. This mass was thought to be a kidney, and as no previous cystoscopic examination of the urinary tract was done, it was left alone. An appendectomy was performed and the patient made an uneventful recovery.

The patient was not relieved by the operation and continued to complain of dizziness, headache, insomnia, constipation, and a sensation of fullness in the lower abdomen.

The patient was poorly nourished and somewhat anemic. The heart and lungs were negative. A healed right rectus scar was present. On abdominal palpation, a mass was distinctly felt just below the umbilicus in the median line of the body, extending towards the right iliac region for about three and a half inches to left of median line. The lower margin could be palpated just above the symphysis pubis. The entire mass appeared to be single, although at its upper margin a definite deep notch could be made out. The mass was soft in consistency and freely movable across the spinal column. The reflexes were normal. The blood pressure was 126 systolic and 78 diastolic. The blood count was 4,590,000 red blood cells, and 9,800 white blood cells with sixty-eight per cent. polymorphonuclear leucocytes. Hemoglobin was eighty per cent. Wassermann reaction was negative. A catheterized specimen of urine was clear, specific gravity 1024, no albumin, no sugar and no abnormal cellular constituents were found on microscopic examination.

Cystoscopic examination revealed a bladder of normal capacity. The mucosa was of normal lustre, and no abnormalities of any kind were noted. Both ureteral orifices were small, slitlike, and normally

situated. Renal catheters (No. 6 Charriere) of the olive tip variety were passed up to 21 cm. on right side and 13 cm. on left side. The segregated specimens of urine were obtained in a normal flow and on microscopic examination showed no abnormal cellular constituents. The urea concentration of the

Fig. 2.—The right pelvis and the ureter of the fused kidney. The pelvis is situated well to the right of the spinal column. All the calyces point inwards.

urine obtained from the right catheter was 1.4 per cent. and from the left catheter 1.1 per cent. phenolsulphonephthalein was injected intravenously and the dye appeared in the urine obtained from the right catheter at the end of three and a half minutes and in the urine obtained from the left catheter at the end of four minutes. The phthalein output from both sides was of a good concentration.

Seventeen c. c. of umbrenal (a solution of lithium iodide) was injected into left catheter until pain was felt by patient in the lower part of abdomen. The catheter was withdrawn and one and a half c. c. more of the opaque solution was then injected into the ureter.

A röntgen ray film was taken and developed while the patient was on the table with both catheters indwelling and the solution from the left catheter was allowed to drain off completely. When the unusual condition revealed itself, I decided, contrary to the rule of doing a bilateral pyelogram at the same sitting, to outline the right side. About the same amount of opaque solution was injected into the catheter and this time the patient began to complain of pain in lower abdomen and somewhat to the right of the median line, and two c. c. more of the solution was injected into the ureter while the catheter was being withdrawn.

SUMMARY AND CONCLUSION

The resulting urograms showed distinctly that we were dealing with a prevertebral type of a unilateral fused kidney. On superimposing both urograms the relation of both pelves to each other, and the relative position of the entire kidney mass could be well ascertained. The urogram showed that the left half of the kidney mass was situated in front of the spinal column, while the other half was situated to the right of the median line. That fusion actually existed, was proved by the previous operative findings, which disclosed a large single kidney mass. The latter could also be verified by abdominal palpation. As has been pointed out by Dourmashkin, the frequency with which kidney anomalies are overlooked and the patient is subjected to unnecessary operation, emphasizes the importance of a careful urological investigation in obscure abdominal conditions.

Fig. 3.—The composite urograms showing both pelves of the fused kidney. The branching calyces on both sides are seen to be separated by a very narrow strip of renal tissue. Note the low position of both pelves.

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218 East Fifteenth Street.

The Treatment of Enuresis*

ARTHUR I. BLAU, M.D.
New York

The care and treatment of enuresis in children has been and still is a source of considerable annoyance, both to the parents and to the medical profession. Not much satisfactory progress has been made in the therapeusis of this vexatious condition by any of the older and tried methods.

The affection from the viewpoint of its frequency and stubbornness is sufficiently important to warrant further investigation and study. In the clinic at the Lenox Hill Hospital I set in motion a series of clinical experiments to determine the effects of the various methods of treatment on this disturbance.

According to the textbooks a whole array of causes might be the responsible etiological factors. As a result of my study, however, I am tempted to say that the average case displays no tangible anomaly or infirmity, definitely causative in nature. It is true that in some cases we find a local or general condition which, by its reflex or constitutional action, may be the inducive factor in the vesicular disturbance, yet very few of the cases in which such local or general condition is found and removed or ameliorated, eventually are cured or improved. Evidently then one must look for a causative explanation in other channels.

Anatomically there seems to be a vesicular atony, particularly of the sphincter. What underlies this atony no one can say with any degree of certainty. My observations seem to point to a neurosis, the result of an undeveloped or unstable nervous system, and all the causative factors mentioned in the textbooks are contributory factors, keeping up and further undermining the neurotic element.

These forms of enuresis, which are by far the most common, may be designated essential enuresis, in contradistinction to those few in which the causative factor, whether congenital or acquired, can be definitely established and a cure or an amelioration effected by the removal or alleviation of that cause.

In the study under discussion a series of ninety cases were observed. Each child was submitted to a thorough physical examination, including urinalysis. A tabulation of the cases follows:

AGE	*Cases*
4 to 6	38
7 to 9	28
10 plus years	24
SEXES	
Male	41
Female	49
TYPE OF ENURESIS	
Nocturnal	69
Diurnal	2
Nocturnal and diurnal	19
PHYSICAL FINDINGS	
Enlarged tonsils and adenoids	16
Anemia	15
Caries	8
Malnutrition	6
Phimosis	2
Bronchitis	1
URINARY FINDINGS	
Bacteria	5
Ammonium phosphate	3
Uric acid	2
Calcium oxalate	2
Albumin faint trace	2

*From the First Pediatric Clinic, Lenox Hill Hospital and Dispensary.

Among the most common affections were enlarged or diseased tonsils and adenoids, with anemia a close second. Phimosis was present in two cases. Removal of the tonsils and adenoids had no effect upon the urinary status, nor had circumcision any effect where phimosis was present. General measures for the correction of the anemia and malnutrition were favorable only insofar as the general conditions were concerned.

The hygienic and dietetic treatment, as well as the general and specific measures commonly used in the treatment of enuresis, were the same in all cases. Most of the cases in the series were treated for months with the usual drugs thought to exert a beneficial effect. Thus strychnine, ergot, belladonna, and a host of other drugs were used, without, however, any material benefit. Only few of the cases responded to these medications. Fifteen of the cases were then put on atropine exclusively. The results of these, however, were no better.

In the balance of the cases, seventy-five in number, pituitary extract and pituitrin were used. Pituitary extract was administered orally in all of these cases, one tenth to one quarter grain, at gradually increasing doses, three times a day. In fifty-four of the cases the oral administration was augmented by the hypodermic use of pituitrin, one half c. c. A series of three injections was generally given, at intervals of three days.

TABULATION OF RESULTS

NO. OF CASES TREATED

	Cases
Pituitary extract only	21
Pituitrin and pituitary extract	54
Total number treated	75

	Cases	*Injections*
Of those injected	18	1
	12	2
	20	3
	4	4 plus

PITUITARY EXTRACT ONLY	*Cases*
Improved	5
Cured	2
Unimproved	9
Not observed	5
PITUITARY EXTRACT AND ONE INJECTION	
Improved	6
Cured	2
Unimproved	2
Not observed	8
PITUITARY EXTRACT AND TWO INJECTIONS	
Improved	4
Cured	3
Unimproved	3
Not observed	2

PITUITARY EXTRACT AND THREE INJECTIONS

	Cases
Improved	10
Cured	8
Unimproved	2

PITUITARY EXTRACT AND FOUR OR MORE INJECTIONS

Improved	1
Cured	3

OF THOSE INJECTED

Improved	21
Cured	16
Unimproved	7
Not observed	10

The period in which these observations were made extended from May 5, 1924, to January 5, 1926. Results were judged after a period of treatment of from three to twelve months.

The duration of enuresis before treatment was begun was as follows:

	Cases
Less than one year	10
Less than two years	28
Over two years	37

From this it is seen that in fifty per cent. of the cases the enuresis was more than two years in duration before treatment began.

The best results were obtained in those who received both the injections and the oral administration of the extract. Particularly favorable results were obtained in those who received the entire series of three injections. Thirty-seven cases out of a total of fifty-four injected were either improved or cured, almost seventy-five per cent. Had we been able to give all the children the full series of three injections, the percentage of cures and improvements would have been considerably higher.

Furthermore, ten of the injected cases never returned for subsequent observation. On the face of the results obtained in cases fully followed up, it is no exaggeration to say that some of these also were improved or possibly cured, still further swelling the percentage of favorably results. Even those who were only treated with pituitary extract orally, almost thirty-five per cent. showed either an improvement or a cure.

Other investigators also report favorable results obtained from the use of pituitrin in the treatment of enuresis. Bonacorsi (1) reports recovery of eight out of twelve children and great improvement in three. She used a series of injections. Our results are sufficiently encouraging to warrant a more widespread use of this remedy in the treatment of this stubborn malady.

CONCLUSIONS

1. Basically vesicular atony is responsible for enuresis.

2. The majority of cases of enuresis fall in the category called essential enuresis, which is probably a neurosis, primarily responsible for the bladder atony.

3. The use of pituitrin in the treatment of enuresis has proven more favorable than any other therapeutic measure. Almost seventy-five per cent. of our cases were either improved or cured from its use.

4. Further clinical experimentation with pituitrin in the treatment of enuresis is desirable.

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114 East Ninetieth Street.

Enuresis with Report of Two Interesting Cases*

WILLIAM J. EZICKSON, M.D.

Philadelphia

It is not my desire in this paper to go into details regarding the general subject of enuresis. You have all met this problem in your daily practice and as a result of various kinds of treatment, and often in spite of treatment, the children graduated from the bed and pants wetting class. However, I know it is quite a frequent occurrence that in spite of all treatment and the advice to mothers concerning proper management of children in this respect, this troublesome condition still continues. Since most children sooner or later become continent, both mothers and physicians have accepted the situation as a necessary evil. The mother has become lax in her training and the physician rather lax in carefully searching for a cause. You may ask, why thoroughly study every case of enuresis, most children grow out of it and if you did examine them thoroughly, seldom could you find any definite causative factor. True enough, but all don't improve. And that brings us to the group of cases who will not respond to the ordinary treatment and care. It is my opinion that any child who has incontinence during the waking hours after the third year and during sleep after the fourth year should have a very thorough physical examination. If this were done more often, fewer children would pass from one physician to another for months and years and finally some serious pathological condition may be found. In the meanwhile the child has been drugged, dieted and punished with and without the whip and the mother has become discouraged and distressed; and it has all been in vain because the real cause has been overlooked.

You must bear in mind the possibility of congenital deformities and abnormalities.

Peripheral causes acting through reflex irritation are not infrequent. Thus incontinence may be due to vaginitis, to an adherent clitoris, or to phimosis. It may be due to thread worms in the rectum, to constipation, cystitis, pyelitis or hyperacidity of the urine. The diet may play a part. Large amounts of highly nitrogenous food and a diet rich in sugar may lead to urinary changes sufficient to cause the trouble. Enlarged tonsils and adenoids have been found as causes.

*Read before the South East Branch of the Philadelphia County Medical Society, April 1, 1926.

I wish to emphasize the great importance of frequent examinations of the urine, when searching for the cause.

I will now cite two cases, which I feel will concretely illustrate the necessity of careful and complete study of the incontinent child:

CASE HISTORIES

Case I.—H. E., aged six. Referred by Dr. Rose Rubin. First seen February 5, 1925. Chief complaint urinary frequency and enuresis nocturnal and diurnal for past two years. Whooping cough six months ago. Measles two years ago. Tonsillectomy had been performed in November, 1924.

The boy was poorly developed, but had no evident abnormalities of heart or lungs. Abdomen seemed rather distended. Urinalysis showed trace of albumin loaded with pus. Urine was exceedingly cloudy. Blood count was normal. X ray examination of kidneys and bladder was negative. Was treated for three months, giving large doses of sodium citrate and various urinary antiseptics but symptoms still continued and repeated urine examinations still showed it extremely cloudy and loaded with pus. I then believed that the boy had some serious pathology in the bladder or the kidneys, suspecting the possibility of patulous ureteral orifices or congenital obstruction at the urethrovesical orifice, or a pyelonephritis. I, therefore, had the child brought to the Northern Liberties Hospital. I secured a catheterized specimen of urine which was sent to the laboratory for culture.

With the catheter in the bladder several ounces of ten per cent. neosilvol were injected through the catheter into the bladder and x ray pictures taken both in recumbent posture and with extreme elevation of hips. The plates proved negative except for some dilatation of bladder. Culture from urine revealed a pure growth of colon bacillus, from which an autogenous vaccine was made.

The boy was given this vaccine every other day in ascending doses. In about two weeks the urine started to clear and the frequency became much less, diurnal enuresis ceased but the bed wetting at night still continued. At the end of one month, the urine became entirely clear, there was no urinary frequency and he wet the bed only once or twice weekly.

At the end of two months the enuresis ceased entirely, the urine was absolutely clear and repeated microscopic examinations revealed no pus cells. The vaccine was discontinued. The boy gained eight pounds in weight and has continued to gain. He has been under my observation off and on for the past six months and none of the symptoms have returned. No other treatment was given while he was receiving the vaccine.

Case II.—R. B., aged eight and a half. Referred by Dr. Louis Kirshner. May 16, 1925. Chief complaint: Enuresis with occasional distress over bladder. Headaches. Eczema at age of four months. Croup at nine months. Measles at one year. Tonsils and adenoids removed at age of two. At four years of age was struck by automobile and sustained an internal linear fracture of skull. Had progressive paralysis of right side of face. This paralysis remained stationary for about one year and then gradually improved and now there is only slight impairment. December, 1924, operated on for acute catarrhal appendicitis. No complications.

Enuresis present more or less since babyhood, but had become markedly worse during the past two years, and now with little control during the day also. Further questioning elicited the following symptoms: Frequency with passing of small quantities of urine, very restless and irritable. Appetite poor. Slept poorly. Progress in school poor. Memory poor. No history of convulsions.

The boy was of fairly good development. Head was rather large with bulging forehead, slight weakness of muscles of right side of face and some ptosis of right lid. Heart, lungs, abdomen, extremities and genitalia negative. Examination of spinal column revealed a very marked depression about the region of the sacrum. Blood Wassermann: negative. Blood count: reds, whites and differential normal. Urine was negative. X ray examination made by Dr. Mulford Fisher. X ray of kidneys, ureters and bladder proved negative. X ray of vertebræ showed the presence of a spinal bifida occulta involving the upper two segments of the sacrum. The family moved to Detroit, therefore nothing was done here.

Delbet and Leri (1), 1923, report a case of enuresis in a young man aged twenty-three. Nothing was found to account for the condition except a spina bifida occulta. They operated, resecting the band of fibrocartilaginous tissue which compressed the dural sac of the nerve of the cauda equina. Enuresis ceased immediately. Since then the authors have done several similar operations.

F. O. Pybus (2) in the *Lancet* in 1921 mentions enuresis as a symptom in some of his cases of spina bifida.

J. S. Leopold (3) in 1920 reported a case of spina bifida occulta with incontinence of urine and feces in a girl age six. She was operated on and the incontinence disappeared after operation.

Beck (4), Von Recklinghausen (5), Borst (6), Hesse (7), Von Finck (8) have written rather fully on this subject.

CONCLUSIONS

In conclusion, I wish to impress the extreme necessity of careful searching for a definite cause in all cases of enuresis which do not respond to the ordinary methods of treatment.

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1922 Spruce Street.

Some Untoward Effects of the Arsphenamines

C. W. BIRNIE, M.D.
Sumter, S. C.

Sufficient time has elapsed since Ehrlich's wonderful discovery to appraise accurately the arsphenamines in the treatment of syphilis. At first heralded as an absolute cure, and even now thought to be by a large part of the laity and many physicians, we know that this view is fallacious and that by itself it does not cure syphilis, but that mercury and iodide of potash in conjunction with arsphenamine is still our sheet anchor in treatment. Besides, bismuth has assumed an important place in some cases. The administration of arsphenamine is almost routine in every physician's office, so that it will not be amiss to look over some of the ill effects and accidents that have occurred from its use.

1. Accidents due to faulty technic.
2. Accidents due to the drug itself.
3. Accidents due to the disease itself.

ACCIDENTS DUE TO FAULTY TECHNIC

The most common accident due to faulty technic is the infiltration of the tissue with the drug, producing a cellulitis. This happens either because the vein has been missed altogether or the needle has gone through the vein. The damage varies from the formation of a nodule to actual necrosis of the tissue, either of which is extremely painful and causes much inconvenience for a considerable time.

Phlebitis and septic infection are due to lack of proper sterilization of the instruments, the patient or the physician himself.

H. J. Nichols, of the United States Army, mentions thrombosis as a complication reported to the Surgeon General's office. A possible source would be the injection of unfiltered solution which may contain some of the undissolved drug, fine particles of glass or some other foreign body.

Syncope is encountered quite frequently and in most cases is caused by either too rapid administration or too great concentration of the drug. For the injection of a ten c. c. solution, and for intravenous injection we should never use a less amount, at least five minutes should be required.

Nausea and vomiting are usually due to the administration of the drug too soon after eating. The best results are always obtained with an empty stomach.

ACCIDENTS DUE TO THE DRUG

Accidents due to the drug itself are in a large measure unavoidable, for there is no way of knowing which patient has an idiosyncrasy to arsenic or how it will manifest itself. These ill effects have been exhibited as skin eruptions, ranging from a simple erythema to a severe dermatitis, purpura or jaundice. Chills and fever and diarrhea have been noted. Fritz, in the *Archives of Dermatology* of Berlin, mentions cases of epilepsy, nephritis, myelitis and anemia of the brain.

ACCIDENTS DUE TO DISEASE

The accidents due to the disease itself are principally those which affect the nervous system. In spite of Nichols's logical theory to account for these nervous relapses there is still doubt as to whether the Bell's palsies, the hemiplegias, the epilepsies are due to the drug or to the disease. Nichols explains it as follows: "Let us imagine a case in the secondary stage with wide dissemination of spirochetæ throughout the body. Certain strains invade the nervous system as well as other parts of the body. . . . The only symptoms may be a headache, except in those cases in which a paralysis may occur. If such a case is given mercury, especially over a long period, the spirochetæ are gradually repressed and reduced in numbers and produce no further nervous symptoms in most cases. The same result may occur without any treatment on account of stimulation of the natural defenses of the body. In a few cases, however, either because the drug does not reach the spirochetæ or because new and resistant strains develop, the organisms multiply again and produce definite nervous symptoms, especially in the tertiary period.

On the other hand, if this patient is given one or two doses of salvarsan and no other treatment, the bulk of the spirochetæ in the body are suddenly destroyed and the symptoms and the Wassermann reaction disappear. All of the spirochetæ are not killed, however, some survive, either because they are inaccessible or resistant, and in a short time they begin to multiply, and they meet no resistance such as is afforded by mercury or the resistance of the body which has not been stimulated continuously by the parasites. As a consequence the organisms multiply locally to an enormous extent and produce a sudden explosive relapse. The effect of the relapse is most evident in the most sensitive tissue, that is, nervous tissue, and here we see such results as deafness, blindness, hemiplegias, etc."

The theory stated above accounts admirably for nervous relapses which occur some time after treatment has been stopped, but does it account in a satisfactory manner for cases where treatment has been recent or actually going on?

A few cases from my own experience will illustrate some of the accidents mentioned above.

CASE I.—A. W., colored male, about thirty years of age, complained of general pains. History of sore on penis a few months previous. Inguinal and cervical glands enlarged. No Wassermann was made. Was given an injection of neosalvarsan. About an hour after treatment patient started for home, ten miles from town. On the way was seized with a violent chill, nausea, vomiting and diarrhea. The nausea and diarrhea cleared up within two days but the chills and fever continued for a week.

CASE II.—J. B., colored male, aged twenty-seven, laborer from Clarendon County. Gave a definite history of syphilis. No Wassermann because of history and his wife had shown a four plus reaction. An injection of neosalvarsan was given with no bad results. A week later another. Two days after the second treatment he had a chill followed by high temperature.

Three days later he had a fine rash over the entire body and an intense jaundice had developed. He was given large doses of magnesium sulphate, and recovered in about three weeks.

Case III.—S. K., Greek male, aged fifty. Restaurateur. He came with a small sore on the penis not definitely outlined. No enlarged glands. Wassermann negative. Under local treatment the lesion on penis healed. Four weeks later came back with enlarged inguinal and cervical glands. Wassermann again made and it was now four plus. Was given four injections of neosalvarsan with no bad results except a slight chill and fever after each dose which cleared up in two days. He was then given eight intramuscular injections of mercury. Wassermann was again made, this time by two laboratories, one was four plus, the other negative. An injection of sulpharsphenamine was then given. The chill and fever were more severe than before. At the end of a week another injection was made. In three days the patient came with a well marked purpura on the buttocks which rapidly invaded nearly the whole body, including the mucous membranes of the nose and mouth, the latter organs to such an extent that profuse and almost uncontrollable hemorrhages occurred. On advice of Dr. M. Weinberg, eight intravenous injections of 0.6 gram of sodium thiosulphate, dissolved in ten c. c. of distilled water, were given; the first five every day, then every other day. In two weeks the skin began to clear and in a month all signs had disappeared. Since then I have given him twelve intramuscular injections of bismuth and the Wassermann is negative.

Case IV.—S. B., colored, farmer, aged forty-five. He complained of rheumatic pains and requested an injection of salvarsan. His blood had been sent off a few weeks previously by another physician and there was a positive Wassermann. A neosalvarsan injection was given and in eight days he returned—all of his pains having left him. Another injection was given him. In five days he returned with a typical Bell's palsy. This has gradually cleared up under ascending doses of potassium iodide.

Case V.—R. J., colored male, chauffeur, aged twenty. He came with a lesion on his penis, enlarged inguinal glands and a rash over his whole body. He was given an injection of neosalvarsan. In ten days he returned with a Bell's palsy, but the syphilitic symptoms had disappeared. He refused further treatment but the paralysis slowly left him without any treatment.

Case VI.—L. R., colored female, aged nineteen. Domestic. She presented an inflammatory condition of both eyes and enlarged cervical and inguinal glands. Wassermann, four plus. She was given an injection of sulphsalvarsan. In a week she returned apparently much better. She did not resume treatment. A few days later there developed a Bell's palsy which is improving under further arsenical treatments.

Case VII.—S. B., colored male, automechanic, aged twenty-two. He had clinical symptoms of syphilis but Wassermann was negative. After he had received two injections of neosalvarsan Bell's palsy developed. Further treatment with arsphenamine, also with mercury and iodide, produced no results. He went North and resumed treatment. While there his blood showed four plus. On his return gave him four injections of neosalvarsan and twelve of mercury. His blood is now negative, but some signs of the palsy persist, especially about his eye.

Case VIII.—E. W., colored male, carpenter, aged forty-five. No sore or rash. Vague pains over the whole body. Wassermann, three plus. I did not see him again for some months. I was called to his home one night and found him with a complete hemiplegia. Two days before he had been given an intravenous injection of one of the arsphenamines by another physician. He died the following day.

Some of these accidents can be avoided by a proper examination and a little precaution.

In persons suffering with cardiorenal affections, with a systolic blood pressure of 200 or over, with nonluetic liver troubles, with marked degeneration of the nervous system, with great disturbance of the optic nerve, salvarsan should be given very cautiously, if at all.

TECHNIC AND PRECAUTIONS

Observance of the following technic and precautions will often save some very unpleasant results.

1. Examine the heart, urine and blood pressure.
2. Never give arsphenamine if patient has been taking arsenic by the mouth recently. If patient shows any idiosyncrasy, discontinue its use and give the other drugs. A negative Wassermann reaction does not always mean that the persons has no syphilis, but a positive reaction is almost sure proof that he has. When in doubt give a small provocative injection and take the blood again.
3. Be sure of your sterilization. Approach this in the same way that you would a major operation.
4. Do not administer within three or four hours after eating and never while the patient is under the influence of alcohol.
5. Solution should always be freshly prepared and filtered before using. Always use sterile distilled water.
6. Be sure that you are in the vein. This can be easily told by the flow of blood. If the injection gives pain stop at once and find another vein.
7. Inject slowly and always test needle to see if it is clear, also expel all air from syringe.
8. If patient shows a bad reaction stop at once.
9. Never allow a patient to leave your office for at least half an hour after treatment. Instruct him to go to bed on reaching home.
10. The diet should be watched for a few days.

I am greatly indebted to Dr. M. Weinberg for his kindly criticism and valuable suggestions in the preparation of this paper.

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Practical Therapeutics

Some Newer Developments in Endocrine Therapy

H. H. RUBIN, M.D.
New York

Until a few years ago, the atom was regarded as the smallest particle of matter known. More recently, however, it has been discovered that the atom is a complicated structure, consisting of a positively charged central body—the nucleus—surrounded by negatively charged electrons (2). Some of these electrons revolve around the nucleus at a speed of several billion times a second. The simplest atom is hydrogen, which has one positive nucleus and one negative electron. The heaviest and most complicated atom is that of uranium, which has 238 positive and 146 negative charges in the nucleus which of itself is surrounded by 92 negative charges. Thus the negative charge always balances the positive charge.

All matter varies according to the atomic makeup, the number and arrangement of the electrons. The tremendous speed at which the electrons travel around the nucleus causes a terrific energy to be exerted, which holds the atoms together, or else the entire universe would rapidly disintegrate.

Some atoms, however, are known to be unstable, i. e., they disintegrate at regular intervals, ejecting some of the positive and negative electrons. With these ejections, which are like violent explosions, waves of great velocity are set in motion, which are electromagnetic in character. The elements whose atoms disrupt in such fashion are called radioactive and there are more than forty of these elements known.

Radium is the outstanding radioactive element, having a high degree of activity and a comparatively long life—about two thousand years. There are several rays ejected from radium which are well known and measurable by instruments of precision. The principal rays are the alpha, beta and gamma, the alpha being a positive helium atomic nucleus, the beta an electron, and the gamma an electromagnetic wave traveling with a velocity of light 186,000 miles a second (4). The penetrability of alpha and beta rays is little compared with the gamma ray, which "can penetrate a foot of solid lead" (3). All electromagnetic waves are measured by their length. The Hertzian or radio waves are several hundred feet long, while the gamma ray is about one tenth of an Angstrom unit (one one hundred millionth of a centimetre) and its frequency is twenty times higher than that of the x ray (1).

The physical and chemical effects of radium rays are: 1, penetration of opaque matter; 2, production of heat; 3, emission of light; 4, phosphorescence and fluorescence; 5, photographic action; and 6, ionization. The penetration of opaque matter and ionization are physical qualities which concern us mostly here as we assume these to be responsible for the marked stimulating effects on the human cell.

According to Simpson (4), the alpha rays are absorbed by .089 mm. of epithelial tissue and are therefore of little therapeutic value. The hardest beta rays lose about ninety-four per cent. of their energy after passing through one cm. of epithelial tissue. The gamma rays, however, are capable of penetrating 20.4 cm. of water, 18.3 cm. of blood serum, or 7.6 cm. of muscular tissue (Giraud).

The radium rays are said to be capable of ionization which is explained as follows: The rays, in passing through the air, strike an atom and separate one or more of its electrical charges from it. The newly separated electrical unit or electron is then called an ion. Due to the impact of the rays, these ions travel at a great speed and soon fill the air, which, when well charged with these ions, becomes an electrical field and the air is then said to be ionized or electrified. The same ionization can be effected in fluids, such as comprise seventy-five per cent. of the human protoplasm (6). Moreover, such ionization is constantly going on within the living body. That this phenomenon is essential to life has been proved by Professor Zwaardemaker (11) by his remarkable experiment described as follows: A frog's heart was kept active by artificial circulation. Upon extraction of the potassium from the circulating medium, the heart stopped beating. The heart was then radiated with a few milligrams of radium for about a half hour, after which it started beating again.

Potassium and radium are both radioactive and when the potassium was removed from the circulating medium, the heart failed to receive the normal ionizing influence and therefore ceased functioning; but when this ionizing influence was substituted by means of radium, heart action was restored. Even in plant life, the effects of ionization have been demonstrated. Everyone has observed in a field of corn that stalks growing in the shady places were dwarfed, compared with those which grew in the presence of the ionizing effects of sunshine. Some time ago Professor Rusby doubled the growth of plants by artificial root radiation.

Dr. W. J. Morton (9), in discussing the physiological effects of radium emanation, states: "The primary effects of the emanation treatment are largely due to the ionization produced. . . . It is, therefore, fundamentally electrical. The activity of the various ferments of the body is increased. Chemical reactions become more active. This means an increase in the rapidity of tissue oxidation, in short an increase in the sum total of all the chemical exchanges known as metabolism, together with a corresponding elimination of the waste products." . . .

Van Noorden says that "radioactive substances give us a method of distributing the carriers of electrical energy in the interior of the body and there engage the fluids, the protoplasm and the cell nuclei in the immediate bombardment of electrical atom explosions."

Saubermann (7), Seide (8), and Colwell and Ross (10) all agree that radium, in certain doses, has a

decided beneficial effect on the human organism. There are other theories as to the exact *modus operandi* of radioactive substances in the human body which are being investigated. However, the ionization theory, as described above, seems to be the logical one, since it is fundamentally an electrical theory. The more we grope into the realm of physiology, the more we are drawn into the field of physics.

Crile, in his monumental work (5) states: "Irritability, assimilation, reproduction, the universal characteristics of living matter as distinguished from the nonliving, are electrical phenomena. . . . The specific characteristic which differentiates the living animal organism from the nonliving materials of which it is composed would appear to be the frequency and force of these electric discharges rather than its static structure. . . ."

The extremely short wave length of the gamma ray and the very high frequency and marked penetrability render it convenient and adaptable for the treatment of the deeper structures of the body—such as the endocrines—by local application.

The endocrine glands are readily ionizable on account of their colloidal structure. The amount of radium employed for this purpose is about twenty milligrams contained in a round plaque about four inches in diameter. The plaque is so constructed and screened as to withhold the emergence of any of the alpha and most of the beta rays. We thus obtain the filtered gamma rays, minus the alpha and beta rays. The plaque is then applied over the region of the various endocrines according to their surface anatomy, at a skin distance of about one inch. The exposure time ranges from five to ten minutes over each gland affected, such time varying with the degree of subfunctioning of that gland. In our experience, covering a period of about three years and the number of patients totaling close to fifteen hundred, we have found in most cases a five minute exposure over each gland repeated daily or thrice weekly for a period of approximately two months was sufficient to restore the normal functioning of that gland.

The alleviation of the symptomatology was accompanied by a rise in the previously lowered basal metabolism and blood pressure, demonstrating that both subjectively and objectively the patient had definitely improved. There has also been noted a marked degree of permanency in the improved status of these patients. A great number have been followed up for a period of more than two years without evincing any sign of a relapse. No untoward effects have been discovered; occasionally radiation of the pancreas would produce mild radiation sickness, slight nausea and headache, which subsided within a day or so and did not recur when treatment was resumed.

The advantages of this method over ordinary organotherapy are manifold. It is a more effective method and is fraught with less empiricism. In cases where the oral administration of gland extracts produces gastric disturbance or cannot be tolerated for other reasons, and in psychoneurotic patients who are possessed of a phobia for hypodermic or intravenous injections, the gamma ray method of endocrine therapy is especially indicated.

Space does not permit us to cite individual cases, but the remarkable results obtained by this method in various disturbances complicated with or ascribable to dysfunctioning of the endocrine glands, which manifest themselves in those symptom groups recognized by the endocrinologist and internist as definite endocrine dyscrasias, urge us to invite the medical profession to further exploration of this fascinating new field of endocrine therapy.

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366 FIFTH AVENUE.

The Use of a Respiratory Stimulant in Surgery*

O. HUEBLER, M.D.
Vienna, Austria

Numerous reliable therapeutic substances, with prolonged effect, are available for stimulating the diminished frequency of respiration. I have obtained decidedly remarkable results by using coramine in cases of respiratory difficulty, and am in position to confirm the observations of Franz Uhlmann to the effect that coramine not only increases the respiratory rate but also renders the respiration deeper.

Preceding every major operation the patient receives 0.02 gram of morphine, causing an artificial lowering of the respiratory frequency; the simultaneous administration of one ampule of coramine antagonizes the depressive action of morphine upon the respiratory rate. Wherever this method was employed, the general anesthesia was normally uneventful, and the respiration was quiet, regular and deep.

We have further availed ourselves of the advantage offered by this remarkable action of coramine, and shortly after the operation, during the stage of awakening, when symptoms of asphyxia frequently appear, have resorted to repeated hypodermic injections of coramine. This treatment resulted in the prompt relief of the symptoms, rendering the respiration quiet, deep, and regular.

It is well known that postoperative nausea and vomiting may be influenced by quiet respiration. The

*From the Section of Orthopedic Surgery of the Wilhelmina Hospital, Vienna.

increased depth of the respiration resulting from the administration of coramine may have been the reason why postoperative pneumonia, a complication not infrequent after cholecystectomy, was never observed in our cases.

In a series of cases, I was able to confirm the observations of Thannhauser and Fritzel that coramine elevates the blood pressure in collapse. These were instances in which collapse occurred in consequence of severe hemorrhage incident to the operation. Prompt administration of coramine intravenously changed the picture immediately. The pulse, which was hardly perceptible at first, within two to five minutes became full and rhythmic; the general pallor disappeared and the patient, breathing deeply, conveyed the impression of being asleep. When the intravenous administration is used, the action is immediate and persists from a half hour up to several hours; when the injection of coramine is repeated, it again promptly produces a similar effect. No undesirable effects due to overdosing were noted, even though in one case as many as five ampules were given within an hour.

I wish to caution against the use of coramine in those cases where the lowering of the blood pressure is caused by blood escaping from the vessels, as for instance when the hemorrhage is from an ulcer of the stomach or from wounds. In these cases the hemorrhage frequently ceases in consequence of the diminished blood pressure, and the lowering of the blood pressure may have a lifesaving effect. When the blood pressure is too rapidly increased following the use of coramine, the hemorrhage, which has already stopped, may commence again. I have encountered such an experience with a patient suffering from hemorrhage from a gastric ulcer and with another patient who had been wounded in the lungs. In these cases preference should be given to analeptics that possess slower action.

CONCLUSIONS

Coramine is a remarkable analeptic, which on account of its prompt and reliable effect is almost indispensable in medical practice. It is especially useful in surgery, for the treatment of difficulties of the respiratory centre, following general anesthesia. Because of its simultaneous action on the diminished blood pressure, it affords the surgeon opportunity to relieve promptly conditions of collapse arising during and after operation. Coramine permits of exact doses and has a more prolonged effect than camphor preparations. The facts that injection is painless and that abscess formation has never been observed, contribute to its advantages over camphor, the dose of which is uncertain and its effect slower to appear. Furthermore, the convenience of oral administration may be particularly valuable when treatment needs to be continued over a protracted period of time.

Ephedrin in Asthma.—William S. Thomas (*American Journal of the Medical Sciences,* May, 1926) presents an analysis of the effects produced in twenty patients and concludes:

Ephedrin, administered by mouth to a series of twenty patients, suffering from asthma, has given relief to all but three and is an important substitute for epinephrin as a palliative remedy. In certain respects and in certain cases the newer drug is to be preferred. In certain asthmatic patients for whom no means of permanent relief has been found, the drug has been used in regularly continued dosage with the result of keeping them asthma free during the period of its administration.

Its advantages over epinephrin include: 1, The fact that it is effectual when given by mouth; 2, the fact that its effects are more prolonged than those of epinephrin; 3, the absence, in most cases, of tremor and palpitation as by effects of doses sufficient to relieve bronchospasm.

Among its disadvantages, as compared with epinephrin, are: 1, Its occasional failure to relieve asthmatic symptoms where the older drug does relieve; 2, by effects, occasionally met with, which then render its use impracticable even though it relieve the bronchospasm (it is possible that these ill effects may be nullified by proper means); 3, when given by mouth, its effects are, of course, less rapidly produced than are those of epinephrin given hypodermically. Ephedrin, however, may also be given subcutaneously; 4, delay in obtaining ephedrin is unavoidable at present.

A field for the use of ephedrin appears to lie in its employment as often as is necessary to prevent the occurrence of paroxysms in asthmatic patients that are awaiting the completion of skin tests, courses of vaccine administration, rhinological treatment, radiotherapy or other methods from which more permanent benefit is hoped. When effectual, its use in these preventative doses has been more satisfactory than the treatment of paroxysms by injections of epinephrin.

Whether the long continued administration of this drug to particular patients will prove to be harmful to them or not, is not known at present.

Experimental and Clinical Investigation of Mercurochrome.—A. T. Todd (*Lancet,* November 14, 1925) is convinced that mercurochrome is a powerful antiseptic of low toxicity, rapid and deep penetrability, and causes little irritation. It does not precipitate albumins. If protected from light it is stable for long periods in normal saline solution. Its antiseptic properties are augmented by acidity; they are diminished by increased density of solvent and are likely to be less apparent in heavy infections. Various strains of an organism show differences in susceptibility. At acidities near to normality its antiseptic properties are relatively feeble and it is unlikely to be of value in general infections.

Value of Irradiated Cholesterol in the Treatment of Rickets.—Leonard G. Parsons (*British Medical Journal,* March 20, 1926) reports a case of severe rickets which was under treatment for the greater part of one year. For five months the child received codliver oil but with only slight improvement; during the last three months of the year it was given three per cent. irradiated cholesterol in linseed oil, with the result that the rickets was cured. Whilst it clearly is impossible to generalize from one case, the results obtained suggest that this method of treatment is well worth a trial either alone or in combination with codliver oil, in cases which do not respond quickly to codliver oil alone. It is not an expensive method of treatment.

Editorial Articles

EXERCISE AND HEALTH

It is an axiom beyond peradventure that to have and to maintain good health exercise is essential. It is also an indisputable fact that when the man settles down to business, and the woman to domestic life or business, exercise is largely neglected, with physical and mental deterioration as a result. The individual is likely to become obese and lethargic with a dulling of the senses and the will to work, or the exercise taken is unsuitable, incomplete and insufficient, and overeating becomes a habit, followed by its natural corollary of a poisoning of the system by its retained waste products.

The true object of exercise is to maintain physical fitness, and with it that mental alertness necessary to carry on business or any sedentary work with success, after the passage of the active years of life. In short, to keep physically fit in middle and later life. How best to accomplish this end is told in a book written by F. A. Hornibrook, published recently by Cassell and Co., Ltd., London. Mr. Hornibrook points out that even when exercise is taken during middle life, it fails to attain the most beneficial results because it does not go far enough and is not followed up by reasonable selfdiscipline.

The neglect of the abdominal muscles is the point upon which the author insists chiefly, and to this neglect he attributes much of the ill health which, as Dr. Leonard Williams remarks caustically in an introduction to the book, "pursues this ignorantly self-indulgent generation." Reeducation of the abdominal muscles, according to the gospel of health preached by Mr. Hornibrook, is a long step in the direction of recovering and securing good health, and moreover, it is open to all middleaged men, who suffer from no serious organic disease, and who have abused their bodily functions carelessly and unwittingly.

The main argument in the thesis set forth is that civilized people ignore or are unaware of the value of abdominal exercises as practised by primitive people in their native dances. Attention is drawn to the fact that it is not by guesswork that the abdominal and pelvic regions are made the pivot of the native dance exercise. The native belief is, that if the lower half of the trunk is properly exercised and developed, the rest of the muscles can be and are thrown into action simultaneously. It is maintained that the native dance exercises are based on the sanitation of the bowels as the primary principle of health. All natives believe that the health of the body is in the bowels; that when the bowels are clean, the whole body is clean; and that when the bowels are unclean, the whole body is full of uncleanness and that bowel cleanliness is dependent on really efficient evacuation.

It may be said that medical men and the public generally in civilized life hold that the sanitation of the bowels is essential to good health, but they use different methods to accomplish this object. They are likely to depend on the usual forms of exercise in vogue and on artificial means, or when their opportunities for exercise are difficult, or practically unattainable, to rely wholly on artificial means. Abdominal exercises, the technic and details of which are explained fully in this book, and diet, are the methods which the author teaches to ward off disease and to maintain physical fitness in middle and later life.

THE HARRISON NARCOTIC LAW

When the Federal (Harrison) Narcotic Act was enacted there was considerably less information about the illicit use of narcotic drugs by habitues than there is today. With the knowledge at that time available the federal regulation was consistent and its enactment desirable. The opinion formerly prevailed throughout the country that narcotic drug habituation was in the main incident to careless prescribing by physicians and loose pharmaceutical issuance. Today we know such is not the case.

The experiences of some half a hundred special narcotic clinics in some twenty-eight states; the enforcement—or partial enforcement—of the Harrison Law, together with several state and many municipal statutes relating to this topic, have furnished data on which we, today, may with safety consider regulation of narcotics from an entirely different angle. From medical supervision to police control.

A rather short police experience in New York city with many thousands of cases of narcotic habituation in nonmedical individuals has demonstrated a more than practical method of consideration: in fact, if it were practical efficiently to enforce the present laws they would not meet the situation; with an amendment, such as we have in mind, along police control lines, it might not only curtail smuggling considerably but actually prevent considerable of this material from falling into the hands of those who use it for sinister enterprises.

Opium in its resinous or raw state is not used to any extent by the modern drug addict: he prefers, and uses, the drug in its refined state, which clearly demonstrates that methods of issuance of morphine

must be revised if we are to make any progress in this control. America is one of the largest users of this drug (opium) and our per capita of imports is excessive for medical and scientific purposes. For instance, in 1922, the importation into the United States was about seven grains of opium—in morphine the equivalent of seven eighths of a grain—per individual.

Some one has made the statement that about half of the narcotics used by addicts are smuggled. We then ask, from where and to whom? Thus there is a rumrow or bootlegger who supplies the underworld with drugs—which naturally must be obtained illicitly and distributed illegally.

The beverage bootlegger has his source in stills, smuggling, diversion, and needs all means of transportation to move his wet goods from source of supply to point of distribution for the users, but the narcotic bootlegger does not have to have such bulky accessories. He cannot, or does not, refine the raw produce. The legitimate refiner of opium is his source, not the grower of opium. These goods are easily gathered in either by himself or his agents, not only here but in all places where opium is refined into morphine—England, France, Germany, Switzerland and this country—and communication between these are frequent. Personal messenger service, or disguised shipments, do the trick. Here is indicated a needed amendment to meet this issue. It must be made impossible for refined opium to fall into the hands of the illicit dealer or bootlegger. Some say it cannot be done. It is possible but it may be difficult.

Heroin, a derivative of morphine, has met its Waterloo in a recent national prohibitory amendment, but it is not practical so radically to consider morphine, which is an essential of medical practice in very numerous instances.

Physicians have been under great hardship to prescribe narcotics in quantities or for any length of time to patients in need of such relief from pain. Today the Harrison Narcotic Act unnecessarily burdens the practice of medicine and this is unfair. Relief is highly desirable and it is thought that it is now timely to revise the original federal act so as to take out the burdensome restrictions which have been found to be not only unnecessary in practice but it is high time to make suitable additions to meet the issue in its real and proper place.

What has the study of this problem revealed? It has shown clearly that drug addiction is inexcusable in a nonmedical case. It has shown that addiction spreads through evil association. It has shown that many criminals are drug addicts. It has shown that these drugs constitute the armamentarium of the modern bandit in many instances. Police statutes therefore are needed, not only in National consideration but in State control and if we are to progress these statutes must be along similar lines and cooperative. A model act is now in process of preparation and it is hoped that this act will go a long way in aiding this problem.

If the United States will now lead in this problem it will have done much to show how to save the world from this devastating and burdensome scourge, of which there is none more menacing to health or society.

PLASTIC SURGERY IN FRANCE

Plastic surgery has been making headway in civilized countries. The war naturally gave it a great impetus. In France during the war, it may be said that Dr. Blake of New York had much to do with the advance of this branch of surgery. In New York Dr. J. Eastman Sheehan has been active in developing this art, as it may perhaps be fittingly termed with regard to his particular sphere of operation, the plastic surgery of the face, to which of course chief attention is paid by all plastic operators. To Dr. Sheehan's work in this direction reference has been made frequently in this journal. In Great Britain Mr. Gillies is the leading exponent of this method of making good, as far as possible, lesions or defects of the body due to disease, abnormal development, retarded development, or to injury.

An interesting paper on the subject was presented before the Section of Laryngology and Rhinology of the New York Academy of Medicine at a meeting on March 24, 1926, by Dr. Leon Dufourmental, laryngologist to the Pereire Hospital, Paris, and professor of facial surgery in the Dental School of France. An abstract of this paper was published in the *Bulletin* of the New York Academy of Medicine, May, last.

He pointed out that only a few surgeons practised this form of surgery in France. After Nelaton and Ombredanne, who made it a part of their work, the first to master it in France were Morestin and Sebileau. These conducted in Paris during the war the most important services involving the application of plastic surgery to war wounds. Outside of Paris, the heads of the hospitals devoted to this work were pupils of Sebileau, among them Lemaitre at Vichy and Dufourmental himself at Châlons-sur-Marne. At present there are two courses in which this specialty is taught: one at the Clinic of the Faculté de Medecin, in French, given by Professor Sebileau, and the speaker; the other in English at the International Clinic directed by Dr. Lemaitre, Mr. Gillies, Dr. J. Eastman Sheehan and Mr. Ferris Smith.

Dr. Dufourmental described the various methods employed in plastic surgery and pointed out that the

leading principle of reconstructive surgery is to respect the natural processes of healing. Many large mutilations have been repaired by guiding natural healing. When the result is inadequate it can be supplemented by surgical intervention.

As said before, the war advanced reconstructive surgery immensely and of course enlarged knowledge concerning it and increased the skill and ingenuity of operators. It has become an established branch of surgery, the scope of which will be widened as time passes on. Reconstructive surgery, now confined largely to the face for esthetic reasons, is being employed to correct lesions, blemishes and so on, in other parts of the body. It must be borne in mind that it is applicable to civil life. In these days, when machinery rules everywhere. when automobile accidents are frequent, and particularly in industry in which those suffering from injuries are numbered by the thousands, yearly, reconstructive surgery has a definite place.

WORK OF THE HEBREW SHELTERING GUARDIAN SOCIETY

The recently issued Biennial Report of Hebrew Sheltering Guardian Society of New York outlines the work of that organization and shows the progress made in methods, practical care and ideals during the past few years. The home, which is a modern cottage plan institution for the care of dependent Jewish children, is located at Pleasantville, Westchester County, New York. The officers of the society are Adolph Lewisohn, president; Herman W. Block, chairman of the administration committee; and Samuel D. Levy and Louis Seligsberg, vice presidents.

Only a few years ago the Hebrew Sheltering Guardian Society was a congregate institution in New York city, housing between six and seven hundred children under one roof, and boarding out approximately two hundred additional children who were regarded as undesirable for institutional care, or as still too young to be transferred to the institution. In 1912 the society gave up its congregate housing plan and moved to Pleasantville, but retained approximately the proportion of children housed to those boarded out. Today, however, these relative positions have been reversed. The cottages at present house three hundred and the foster homes under the supervision of the Home Bureau five hundred and fifty. This change is the result of a definite progressive social policy that children who cannot be kept in their own homes are preferably placed in good foster homes, adequately supervised by trained social workers, rather than in even the best type of institution.

Another change has been in operation since the Jewish Children's Clearing Bureau was opened in New York four years ago to investigate applications for placement. Ever since that time, great care has been taken to prevent the removal of children from their homes merely because of poverty. This means that the children now received for care may be roughly classified as follows: a few full orphans; a large number of children whose parents are temporarily mentally or physically disabled; children whose parents are improper guardians from the standpoint of morals; and an increasingly large number of children who present various types of behavior problems that cannot be solved in their homes or present environment. It has been found that both in the institution at Pleasantville and in the Home Bureau the task of adjusting the child of bad heredity or poor social background and the children who are in themselves problems, is becoming increasingly great and difficult. To meet this situation, a mental hygiene department has been established at Pleasantville under the direction of Dr. Clarence P. Oberndorf, chief psychiatrist at Mt. Sinai Hospital. Assisting Dr. Oberndorf are two visiting psychiatrists and three psychiatric social workers. The function of this department is three fold: first and foremost, by early detection of slight deviations from normal behavior, to adjust the situations that give rise to these, whether caused by environment or by conflict in the child's mind, thus forestalling and preventing if possible more serious maladjustments in the future; second, when such maladjustments have gone beyond the early preventive stage, to give the best possible psychiatric therapy for such conditions; third, to decide whether any given maladjusted child is such that it cannot be retained at the institution without real detriment to the other children.

Accurate and detailed clinical records as a means of evaluating progress are being kept, and a system of recording and filing of data is being devised with the object of making these records as nearly uniform as possible. "In summing up what the department has accomplished," says the report, "it can be said that excellent contacts have been made with those whom we have met so far, and that we have made a promising beginning in the work. No immediate and sudden changes are to be expected, nor are they desirable in the institution as a whole or in the individuals treated. What changes we hope to accomplish will come gradually, and our aim is to build a firm and secure foundation, of which we are now laying only the first stones."

During the past two years the Hebrew Sheltering Guardian Society has adopted the policy of accepting children whose guardians can pay in part for their maintenance and care. These are children who for various reasons must be removed from their homes, yet on account of their families' incomes are not jus-

tified in claiming public support. A large number of free cases are also admitted as a matter of course. These are to some extent children, who, were it not for their free admission, might be brought to the attention of the public authorities as dependent aliens, likely to become public charges and therefore liable to deportation. Included among the free cases are of course children as to whom there is no question of deportation, but who, if placed at all, must be placed on the free list because they do not fit into the categories of children eligible for commitment by the Department of Public Welfare or the Children's Courts, and have no relative able to pay for their care.

Much is made of recreation and outdoor sports and occupations. Some of these are gardening, bus rides, hikes, tennis, community singing and dancing, festivals and carnivals, football, hockey, basketball, skiing, skating, baseball, cycling, boxing, and other sports and games. Camp Sunny Corners, a few miles from Peekskill, provides the children with summer outings. A recent commission appointed by the National Educational Association formulated a set of cardinal principles of education which have been adopted by the association as the main objectives of the modern education of the child in the United States. These are: 1, health, physical and mental; 2, command of fundamental processes; 3, worthy home membership; 4, vocation; 5, citizenship; 6, worthy use of leisure; 7, ethical character. The Hebrew Sheltering Guardian Society has taken these seven principles as the basis of its educational plan, and is applying them with marked success.

THE FIRST PRESIDENT OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA

Dr. John Redman, the first president of the College of Physicians of Philadelphia, is the topic of an interesting and sympathetic sketch by Dr. William S. Middleton in the fall number of the *Annals of Medical History*. After an apprenticeship under Dr. John Kearsley, Sr., of Philadelphia, an apprenticeship which included among its functions those of servant, messenger boy, prescription clerk, nurse and assistant surgeon, Redman practised medicine for several years in Bermuda, and then spent a year of study in Edinburgh. He took his degree in medicine at the University of Leyden and studied in Paris and London before returning to Philadelphia, about 1750. He at once took a prominent place in practice there and rose to leadership. He was the first president of the College of Physicians, a trustee of the College of Philadelphia until it was merged in the University of Pennsylvania. For twenty-nine years he was on the staff of the Pennsylvania Hospital.

Notwithstanding his delicate health, he lived to be eighty-six years old. He was an active participant in all medical affairs of the time and his report on the yellow fever epidemic of 1762 is the most complete and informing papers extant on that subject. He acted as preceptor to many physicians who later won distinction. Doctor Middleton gives an interesting survey of medical affairs in Philadelphia during Redman's life, in all of which he took an active part.

THE ROSS INSTITUTE AND HOSPITAL FOR TROPICAL DISEASES

On July 15, 1926, the Prince of Wales opened the Ross Institute and Hospital for Tropical Diseases situated on Putney Heath, a London suburban district a few miles from London. The institute has been founded to commemorate the twenty-fifth anniversary of the discovery by Sir Ronald Ross of the method of transmission of malaria to human beings. Its objects are to carry on research work in the prevention and treatment of tropical diseases and to assist medical men to carry out research work.

The building, formerly known as Bath House, provides three laboratories, two wards for patients suffering from tropical diseases, accommodation for nurses and a library. Investigations of diseases of tropical interest have already begun, and it is proposed to carry out researches on cancer and smallpox.

In the course of his opening speech the Prince of Wales quoted the saying of a well known writer to the effect that it was not too much to say that Ronald Ross had made one third of the world habitable.

MOSQUITOES PREFER BLONDES

Like the men depicted in a recent popular novel, it seems that mosquitoes too prefer blondes. While evidence goes to show that mosquitoes are more apt to pay their unwelcome attentions to fair rather than dark people, it appears to have been proved conclusively that there are three classes of persons as far as mosquitoes are concerned: 1, Those extremely sensitive to infection by mosquito bite; 2, those who might be called normal, and 3, those who might be called resistant. No reasonable explanation is forthcoming as to why this is so. One suggestion is that glucose in the blood may enter into the question. The subject is interesting and of some importance, and any data on the point which might be contributed by those who are concerned with the point and who have opportunities for testing the susceptibility of certain individuals, would be rendering a service of pathological value.

Obituary.

JOHN GEORGE ADAMI, C.B.E., M.D., F.R.C.P.

Liverpool, England

John George Adami, a pathologist of international fame, as well known in this country as in England and perhaps better known in Canada than in his native land, passed away on September 29th last in a nursing home in Liverpool. He was born in Manchester on January 12, 1862. His father was a Manchester man and his mother was the sister of Professor D. J. Leech, a well known Manchester pharmacologist. He was educated at the grammar school and Owen's

College, Manchester, and at Christ's College, Cambridge, where he took a first class in the Natural Science Tripos and was Darwin prizeman. He studied also in Paris and Breslau, and having taken his degree in medicine at Cambridge became house physician to the Manchester Infirmary. He then went back to Cambridge as demonstrator of pathology, was awarded the John Lucas Walker studentship, and was made a Fellow of Jesus College. At Cambridge Adami entered with enthusiasm into research work in collaboration with Smart Roy, who had been trained by Cohnheim. Their observations in comparative pathology were of considerable value and Adami was recognized as a coming man. Roy and Adami published the *Physiology and Pathology of the Mammalian Heart.*

When only thirty years old he was given the post of Strathcona Professor of Pathology and Bacteriology at McGill University, Montreal. He was an excellent teacher, both in the classroom and the laboratory, his scientific gifts being combined with an extraordinary aptitude for business and an unlimited appetite for work. In Montreal he associated himself actively with most of the movements for the improvement of health and on the outbreak of the war had attained a position of eminence in Canadian medical life.

At Montreal Adami was the first professor of pathology at McGill and developed the department. He did not do much laboratory work himself but was greatly interested in the possible relation of intestinal bacteria to cirrhosis of the liver.

Perhaps, however, it was as a writer that Adami's name will live. He was one of the original contributors to Allbutt and Rolleston's *System of Medicine.* His article on inflammation therein was on the whole the best contribution. It is a classic which should be read by all students anxious to know about pathology. Next his great *Textbook of Pathology* appeared. The *Principles of Pathology* came out in 1909 in two volumes. It was hailed as the best presentation of general pathology in the English language. Its author was well equipped for the task, he had worked with Roux in Paris, with Heidenhain in Breslau, and with Michael Foster and Roy in Cambridge. Moreover, he wielded a forceful pen, and was a master of clear and expressive English. No second edition was published as this would have entailed work too great for any one man. Four years after Adami and John McCrea, his colleague at Montreal, brought out a *Textbook of Pathology* in one volume which has had a great vogue and has been republished in revised form.

In 1917 he delivered the Croonian Lectures before the College of Physicians of London. These dealt with evolution and with additions were published in book form. They considered biology chiefly and criticized severely the unsatisfactory state of opinion on the questions of variation and adaptation. He also sent out from his Montreal laboratory contributions to the pathology of the heart and bloodvessels and a classification of tumors which appeared in the *Journal of Pathology,* 1903, Vol. 8, p. 243. His *Principles of Pathology* was his greatest work and its only fault was that it was in advance of the times. But Adami's views were based on a sure foundation and in the main they will be accepted as such.

On the outbreak of war he placed his services at the disposal of his country serving in the Canadian Army Medical Corps with the rank of colonel and became Assistant Director of Medical Services. He was also historical recorder of the Canadian Expeditionary Force. In this capacity he showed himself an unsparing critic when he thought that criticism was called for. After the war had ended he accepted the post of Vice-Chancellor of the University of Liverpool and interested himself in the affairs of the university and the city with as great energy and zest as he had displayed in the same direction in Montreal. During the seven years he was at Liverpool it is acknowledged on all sides that he did magnificent work for Liverpool University. With the students he was very popular. In this country Dr. Adami was known in medical circles everywhere and he had several offers of posts in universities in various states. He possessed not only the highest scientific acquirements and gifts but possessed in addition that boundless energy and that business acumen which commend themselves to Americans. In our issue for August 15, 1926, is published the last address that Dr. Adami gave, dealing with the nature of malignancy. It may be said that it is a brilliant presentation of the subject.

Naturally Adami received many academic honors. He was an honorary F.R.C.S. of England, of Scotland, and of Canada, an honorary M.D. of American universities, and an honorary LL.D. of other American universities. Besides being a Fellow of Jesus College, Cambridge, he was a Fellow of Christ's, his own college. He had been president of the Canadian Association for the Prevention of Tuberculosis, president of the Association of American Physicians and Fothergillian Medallist of the Medical Society of London.

CHARLES EDWARD NAMMACK, M.D.

New York

Dr. Charles E. Nammack, who died at his home in East Fifty-ninth street on October 4th, was for many years one of the leading physicians of this city. He was born in New York seventy years ago, and was graduated from University and Bellevue Hospital Medical College in 1881. He was made a Bachelor of philosophy by St. Francis Xavier College, and a doctor of philosophy by Fordham University, and a doctor of laws by Fordham University. He had been clinical professor of medicine at Cornell Medical School since 1898, was for twenty-three years attending physician to the out-patient department of the New York Hospital, surgeon to the New York Police Department for thirty-three years, and visiting physician to Bellevue Hospital since 1896. He had also served on the staff of St. Vincent and St. Lawrence Hospitals in New York, and St. Joseph's Hospital, Yonkers.

Dr. Nammack contributed many valuable articles to the New York Medical Journal, the *Catholic Encyclopedia, The Messenger,* and the *St. Vincent de Paul Quarterly.* He was a member of the leading medical organizations, both local and national, and of many societies. He is survived by his son, Dr. Edward H. Nammack.

Das Kurhaus, Wiesbaden

A Study Tour of Europe in 1926

RICHARD KOVACS, M.D.
New York

(*Concluded from page* 439)

ROLLIER'S CLINIC

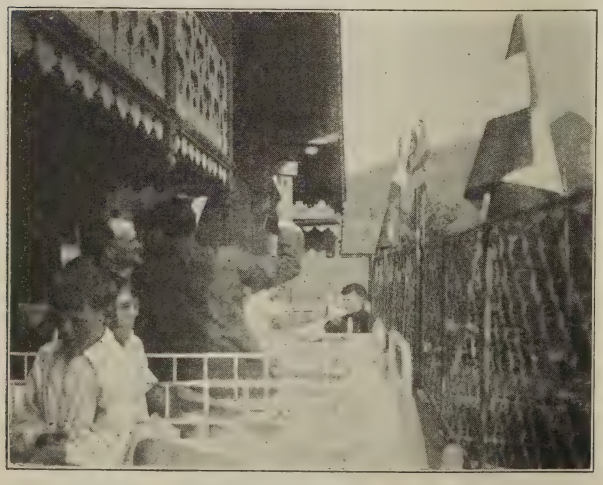
The visit to Rollier's Clinic in Leysin was one of the most impressive of our trip. We motored up from Lausanne, along the shores of beautiful Lac Leman, passing Vevey, Montreux, and the famous Chillon castle. The road then winds up along a wonderful gorge, to a plateau at an altitude of almost 4,500 feet, surrounded by still higher towering mountains, snow covered even in summer, and here lies the village of Leysin. Rollier started his first clinic for the treatment of all types of surgical tuberculosis by heliotherapy in 1903 here, and by his untiring enthusiasm built up a wonderful organization and won the confidence of the medical world which now recognizes his methods as standards. The main explanation of Rollier's results is that instead of considering surgical tuberculosis merely as a local ailment, he directed treatment towards the complete reconstruction of the whole organism, and has found systematic general insolation in the pure and bracing mountain air most efficient for both general and local treatment. Besides there is a painstaking attention to general régime, a mainly lactovegetarian and fruitarian diet, with meat only once a day and alcoholic drinks and smoking forbidden. Plaster casts are done away with, instead there is immobilization in bed; under insolation the atrophied or swollen limbs show wonderful development. Cold abscesses often absorb spontaneously—if not, are evacuated by punctures, never by incision. Several cases of cold abscesses operated on the outside for appendicitis were seen. All cases are controlled by x rays and exact laboratory procedures. The work cure (occupational therapy) forms a most important part of therapy. The main clinic is *Les Frénes* which, like the others, has open balconies where the patients are directly moved out from their rooms. This clinic and the original clinic *Le Chalet* are owned by Dr. Rollier; other clinics are owned by various authorities, and by individuals, being adapted or built especially for the purposes of heliotherapy, and spread out picturesquely around the village and its meadows. The clinics, singly or in groups, are manned by Dr. Rollier's assistants, but each and every individual case is invariably attended by Dr. Rollier himself. There are suitable accommodations for the well to do and the poor, and Dr. Rollier states that better and quicker results are obtained with the latter class, as it obeys dietetic regulations more faithfully. The children's clinics are particularly impressive, on account of their manysided activities and their fine spirit. At the exquisite luncheon tendered to our party, groups of children appeared at intervals rendering clever sketches and songs. There were quite

Leysin village. The building in the centre at the top is Les Frênes, the main clinic of Rollier

a number of American patients among the adults as well as among the children.

PARIS

A week was spent in Paris where the Association for the Development of Medical Relations and the Faculty of Medicine, under the leadership of Professor Hartmann, arranged for clinical visits. The history of the medical institutions is invariably interwoven with the history of France. The Hôtel Dieu is the oldest hospital of Paris, and possibly of Europe, situated on the Island of the Cite. It began in the seventh century as a refuge for the aged, incapable and sick. Four to six persons occupied beds of straw upon the floors in thickly crowded and unheated halls. Among the eminent men of medicine and surgery who have practiced and taught at the Hôtel Dieu are Dupuytren, See Dieulafoy, Chomel, and Trousseau. The name of Grisolle is especially significant, because of the fact that he provided a bed for each patient, heating for the wards, and operating rooms separated from open wards occupied by the patients. Professor Hartmann demonstrated the surgical service and the radium x ray, mechanotherapeutic and electrical departments. Professor Gilbert, chief of the medical service, showed a three way evacuation apparatus,



Rolier showing x ray films to Dr. Fred H. Albee, in Boy Scouts pavilion.

practically applied in a case of pleuritis. This instrument provides for withdrawal of liquid, injections, and manometer attachment, and is applicable for transfusions, evacuations, and all sorts of such procedures. The manometer is considered of great importance, as are also the graphic curves which record changes in pressure.

The Hôpital Cochin is quite modern and we saw the surgical clinic of Delbet and the medical of Widal. The Pauchet clinic is especially designed for instruction. Pauchet has particularly developed regional (paravertebral) anesthesia, using novocain.

The world famous radium work of Mme. Curie is now housed in the new Institut Curie, which was demonstrated by Professor Regaud.

We next visited the Hospital of the Val de Grace which is especially devoted to the military and naval sanitation. Records are still being received referring to the recent war. The initial part of the French historical reports on the war are just being presented. The museum contains numerous specimens obtained from the war cases. Wax models show a variety of vicious postures produced by projectile injuries of muscles and nerves. Part of the hospital occupies

One balcony of Les Frénes, main clinic of Rollier

the site of an ancient convent, and the cloisters, still existing, were shown by Professor Dopter, Curator.

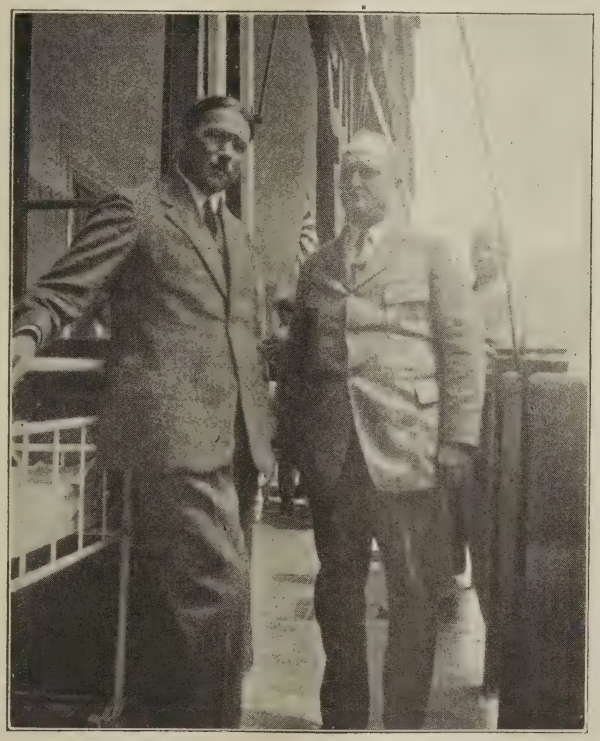
The Faculty of Medicine, with its wonderful museum and library, is of great professional interest, and we also visited the adjoining laboratory of pathological anatomy and its famous dissecting rooms. Anatomy is the most exacting branch of the French medical curriculum, and its lecture rooms are particularly well equipped for teaching. A glass of champagne was served by the Bienvenue Francaise in the Council Room of the Faculty, hung with beautiful and rare Gobelin tapestries.

The Salpetrière was converted by Louis XIV and Mazarin in 1660 from a saltpeter factory into a refuge of the lawless simulators and criminals, as described in the classics of Victor Hugo and Dumas. Now it is a great hospital for neurology (Guillain), neuropsychiatry (Crouzon), and surgery (Gosset). Bourguignon's laboratory for exact methods of electrical testing (chronaxie) is attached, also the fine radiological service of Ledoux Lebas. We stood in reverence in Charcot's library and lecture

room, the latter containing the famous painting showing Pinel striking fetters off the helpless insane. Opposite these ancient buildings is the modern Hôpital de la Pitie, where the medical clinic of Vaquez was visited; special postgraduate courses of electrocardiography and radiology of the heart are given here by Dr. Geraudel and Dr. Bordet. In the surgical clinic Dr. Lenormant showed cases of Pott's disease, treated by the Albee operation. The unexpected presence of its originator, our president, created a small stir.

The Hôpital St. Louis is a great dermatological hospital, world famous on account of its museum, a very large collection of excellent resin models. The director, Professor Jeanselme, also demonstrated the fine laboratory and therapeutic equipment, which include actinic rays, high frequency, etc.

In the Pasteur Institute and Hospital Professor Calmette received us, assisted by Dr. Harry Plotz of New York, a regular member of the staff. We stood in reverence before Pasteur's tomb and saw his original culture media, which remained sterile for more than fifty years, thus still disproving spontaneous generation of bacteria. In the library we saw the urn containing Metchnikoff's ashes, which, according to his will, is placed on top of one of the bookcases. In the laboratories extensive cancer research work on different types of monkeys is going on. Our last visit was to the splendid new building of the American Hospital at Neuilly, just outside the city gates. Dr. Gros, the physician in chief, as well as the entire staff, were our hosts at tea. Dr. Albee donated his newly designed operating table to the hospital. A model physical therapeutic department forms part of the excellent equipment.



DR. ROLLIER and DR. FRED H. ALBEE

* * *

Our official program ended in Paris, as about half of the party thence sailed for the home shores. The remainder spent a week in London, with some individual visits to medical institutes. The Fellowship of Medicine and Postgraduate Medical Association provides a complete weekly list of postgraduate medical opportunities.

We arrived back in New York on August 8th, having traveled two months. A volume containing a detailed account of our Study Tour, including full medical data, is being prepared by the Committee on Publication, and special articles on the surgical and physical therapeutic clinics are also under work.

SUMMARY

A medical study trip as described, with a few days' stay at the various centres, will give its participants a fairly good survey of the medical work in general, and also allows attention to special problems to the exclusion of others. Very instructive immediate comparisons can be made between the various localities. As medical men are at once on common ground everywhere, the personal contacts established usually well outlast the trip. Due to the interest in group visits, international goodwill is, as a rule, markedly promoted both within the profession and in the lay press.

We find that on the continent medical education and institutional work is, on the whole, under state or municipal control, reasonably free from politics and contiguous. A fairly good salary and the respected social position encourages men to devote themselves more or less exclusively to teaching. War conditions have undoubtedly handicapped some centres, but on the whole the excellent clinical teaching and laboratory work goes on as usual. The fact that postmortem examinations abroad are the rule and not the exception as with us, is a great help towards exact clinical diagnoses. Since the war a marked improvement in the training and service of nurses was noticed. Comparing conditions, however, we can be justly proud of the present American status in hospital construction, medical education, including postgraduate facilities and laboratory research. There is no end of interest displayed abroad towards our medical institutions, and it is to be hoped that a stabilized world exchange will soon permit European medical men to visit America more frequently.

Aside from the great general cultural interest of a European trip and of its broadening effect along medical lines, there is a great deal in some of the clinics abroad that is unique and cannot be appreciated until seen on its own ground. Americans are assured of a cordial welcome everywhere.

223 East Sixty-eighth Street.

Italian Congress on Radiology.—The seventh Italian Congress of Medical Radiology was held in Naples, on October 14, 15, and 16. Among those who presented papers were Professor Adinolfi, of the University of Naples; Professor Rossi, of Parma; Professor Epifanio, of Palermo, and Professor Lupo, of Turin. An interesting scientific exhibit was held.

News Items.

New Building for Wyckhoff Heights Hospital.—Excavation is under way for a combined two story pathological laboratory and nurses' dining room on the Stockholm Street side of Wyckoff Heights Hospital.

Dr. Baker at Sing Sing.—The newly reorganized psychiatric department at Sing Sing Prison is in charge of Dr. Amos T. Baker, formerly superintendent of the New York State Reformatory for Women at Bedford Hills.

New Hospital Building.—The corner stone of St. John's Hospital on Herkimer Street, Brooklyn, was laid by Bishop Stires on October 11. The building is to cost more than $1,000,000.

Madrid to Have Psychopathic Institute.—Recent announcements in the Spanish press have stated that the new budget for hygiene in Spain has provided 2,000,000 pesetas for the construction of a psychopathic institute in Madrid.

Syracuse Has Whooping Cough Clinic.—The *Weekly Bulletin* of the Syracuse Health Department reports a gratifying response to the opening of its whooping cough clinic. Cases are classified, studied and treated according to the symptomatology and progress of the disease.

The New Medical Centre.—Dr. Claude Regaud, a director of Mme. Curie's radium institute in Paris, after a recent visit to the New York Medical Centre now under construction, said that it was the most astonishing thing he had seen in all his career and asked for a complete set of plans to take back with him to France. He thought that there were great possibilities to be accomplished by following the New York plan of bringing the hospitals together and coordinating their work.

Dinner for Dr. Downing.—A testimonial dinner to Hon. Augustus S. Downing, assistant commissioner and director of professional education of the New York State Department of Education, will be tendered at the Hotel Commodore, on the evening of October 27th. This will be in celebration of the many years of successful efforts by him to raise medical and other professional standards. Dr. Orrin S. Wightman is chairman of the committee on arrangements, and applications for seats should be made at once to him.

American Society for the Control of Cancer.—The campaign of this society for raising an endowment of $1,000,000 for educational purposes has resulted in a fund of about $443,000 up to the present time. This fact was announced at a luncheon held on October 13th at the Hotel Plaza. Dr. Howard Canning Taylor, president of the society, being the guest of honor. The principal speaker was Dr. George E. Brewer, who praised the work of the society in educating the public as to preventive measures. Dr. Taylor said that there were fully 150,000 deaths from cancer in the United States annually.

New Site for Lutheran Hospital.—The Lutheran Hospital of Manhattan has announced the purchase of an entire city block of land on Washington Heights at 187th Street and Bennett Avenue, where a new hospital building will be erected. The first unit, accommodating two hundred beds, will cost $1,000.000. A campaign will soon be started for the raising of $750,000 which, it is hoped, will be donated by December, so that the construction of the new unit may be commenced in the new year. Provision for persons of moderate means is the special aim of the Lutheran Hospital.

New York Plans School Medical Bureau.—The Department of Education of the City of New York is planning the organization of a medical bureau, one function of which will be to centralize in one group the various medical examiners, now assigned to special tasks, under the supervision of the chief of the Medical Examining Board, Dr. Emil Altman, and so would be subject to assignment by him upon call. Under the proposed plan, Dr. Altman would assign medical examiners to examine applicants for license to teach, and, in cooperation with the associate superintendent, would assign examiners to examine members of the teaching and supervising staff, the administrative staff, and the staff of attendance officers in the discretion of the Superintendent of Schools, make report and recommendation thereon, and suggest methods of improving the physical condition of the members of such staffs.

Death of Westchester County's Oldest Physician.—Dr. H. E. Schmidt, the oldest physician in Westchester county, died at his home in White Plains on October 11, at the age of 92. He was born in Germany, organized the first hospital in Japan and began the practice of medicine in White Plains in 1863.

Opening of New Building.—The formal opening of the new building of the New York Academy of Medicine will be celebrated by an elaborate three day programme commencing on November 18th. The new building at Fifth avenue and One Hundred and Third street consists of a main building approximately 100 feet square and six stories high; an extension sixty by seventy-six feet, which is three stories high and a stack fifty-eight by forty feet. The removal of the books to the new library which began in July is nearly completed and the new library will be open by November 1st.

Clinical Catalogue.—A comprehensive catalogue of "Opportunities for Clinical Study in Hospitals of New York City" has just been issued by the New York Academy of Medicine which will furnish copies without charge to physicians who are interested. The Committee on Medical Education maintains at the Academy a Bureau of Clinical Information where detailed information is available regarding opportunities for graduate medical study in Greater New York, and also in other cities of the United States, Canada and Europe. The committee publishes a daily bulletin giving the operations to be performed in seventy-five hospitals and the medical clinics to be held in twenty-five hospitals. This bulletin will also be mailed free to physicians interested.

Montpellier's Journées Médicales.—The city of Montpellier, France, celebrates this year the centenary of the establishment, in the old *Universite de Medecine,* of its *chefs de clinique.* The day chosen for the celebration is November 3d. This event will precede the three *journées médicales* which have been arranged by Dr. Desfour, for November 4th-6th. The fourth will be devoted, according to the announcement, to contemporary science as a whole, and specifically to the commemoration of the centenary of the discovery of brome; the fifth will be devoted to military hygiene and sanitation; and the sixth to legal medicine and its various phases and problems. The *journées* will be succeeded by a day, Sunday, November 7th, of excursions to various points of interest.

Mental Hygiene in Italy.—The *Lega Italiana per la Prevenzione delle Malattie Nervose e Mentali* has been founded in Rome. Its purpose is analogous to that of similar leagues already established in the larger countries of Europe and America. Honorary chairmen are: Prof. Leonardo Bianchi, senator, and Professors Morselli and Tanzi; active chairmen are: Professors Ettore Levi, Ferrari, and Medea. The following chapters have already been organized and have begun work: Lombardy (Prof. Medea), Piedmont (Prof. Lugaro), Ligura (Prof. Vidoni), Emilia (Prof. Ferrari), Marche (Prof. Modena), and Abruzzi (Prof. Del Greco). At Rome a Latium chapter has been established, which is housed in the *Instituto Italiano d'Igiene Previdenza ed Assistenza Sociale,* under the chairmanship of Professor De Sanctis of the University of Rome.—*Mental Hygiene Bulletin.*

Gifts and Bequests.—Through the will of the late Kate S. Richardson, widow of Edward W. Richardson, a million and a half dollars were left to welfare institutions and organizations. The Society of the New York Hospital received $587,978; the Henry Street Settlement, $200,000; the United Hospital Fund of New York, $293,988; the New York Society for the Prevention of Cruelty to Children, $50,000; the Association for the Aid of Crippled Children, $60,000; the National Child Welfare Association, $30,000.

The will of the late Alfonso de Navarro provided that seventeen welfare institutions receive bequests. Among these were the New York Hospital, St. Elizabeth's Hospital, and St. Vincent's Hospital, each of which received the sum of $5,000.

The University of Chicago has received a bequest of $600.000 from the estate of Miss Helen Culver, for the further development of biological science.

By the will of John McCaffery the Hospital of St. Elizabeth of Hungary, New York, received six thousand dollars; the New York Society for the Relief of the Ruptured and Crippled, the Servants for the Relief of Incurable Cancer, St. Vincent's Hospital, New York Ophthalmic Hospital, for the purchase of appliances and instruments for the care or comfort of deformed or crippled children.

Personal.—Surgeon J. W. Schereschewsky of the U. S. Public Health Service attended the recent Symposium on Cancer held at Lake Mohonk.

Dr. Hyman D. Silver, who has been spending the summer in Europe, has returned to New York and is located at 1384 Grand Concourse.

Dr. Joseph Rivière of Paris and Dr. Franz Nagelschmidt of Berlin have recently been visiting in New York, whence they went to Chicago and Detroit to study the progress of physiotherapy.

Dr. Stephen J. Spitzer has been appointed adjunct attending surgeon to Sydenham Hospital.

Prince Asani of Bangok, grandson of a former King of Siam, has enrolled as a freshman at Harvard, where he will study medicine. He is nineteen years of age. The Prince was accompanied to Cambridge by Dr. Francis B. Sayre, formerly legal adviser of King Rama VI of Siam. Dr. Sayre is now professor of law at Harvard.

Dr. E. Garnsey Brownell sailed for Europe on September 25th. His first stay will be in France.

Dr. Alexander W. Mackensie, senior surgeon of the Cunard fleet, who has been attached to the *Mauretania* since the World War, has retired from active service. Dr. Mackensie had served twenty-five years on the Cunard Line, and before that was surgeon of the White Star fleet. He was on the Franconia when, during the war, she was torpedoed in the Mediterranean, and he received an injury to his right hand from a piece of German shell. He was born in Edinburgh and graduated from the university of that city. He was a warm friend of many of the members of medical profession and others who have found him a most congenial companion in crossing the Atlantic for more than forty years.

Dr. Ferenczi, of Budapest, has arrived in New York, where he will give a course of lectures at the New School for Social Research. He has not been in this country since seventeen years ago, when he accompanied Freud and lectured at Clark University.

Society News and Notes.

Professor F. Neufeld, Director of the Robert Koch Institute for Infectious Diseases, Berlin, will deliver the first Harvey Society Lecture at the New York Academy of Medicine, on Saturday evening, October 30, 1926. His subject will be Recent Investigations in Tuberculosis.

* * *

At the annual meeting of the National Association of Police and Fire Surgeons, and Medical Directors of Civil Service Commissions of the United States, held in Philadelphia on September twenty-second, Dr. Daniel J. Donovan, of New York, was elected president. The next annual meeting will be in Los Angeles, California.

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The Woman's Medical Association of New York announces that the night of the meeting has been changed from the third to the second Wednesday night of the month so as not to conflict with the meetings of the New York Academy of Medicine.

* * *

Among delegates to the recent conference in Washington of the International Union of Pure and Applied Chemistry who visited New York City were Dr. Paul Lapie, rector of the University of Paris; Prof. Paul Sabatier, of the Institute; Prof. Gabriel Bertrand of the Sorbonne; and M. Marc Bridel of the Museum. A reception and dinner to the delegates was given by the *Alliance Francaise de New York* at the Hotel Brevoort.

* * *

The New York Cancer Association had the privilege of showing to the foreign delegates to the Mohonk Cancer Symposium their recently organized research laboratories in the course of construction at 250 West Forty-ninth Street. The visit and accompanying tour were under the direction of Dr. Walter H. Conley, medical superintendent of the Department of Public Welfare. The party also visited the Cancer Clinic at 124 East Fifty-ninth Street and the Cancer Hospital on Welfare Island, both of which are maintained and conducted by the Department of Public Welfare.

* * *

During the recent session of the American Electrotherapeutic Association at Atlantic City, Dr. William B. Snow of New York City was given a testimonial dinner at the Hotel Ambassador in celebration of the twenty-fifth anniversary of his editorship of Physical Therapeutics. He was presented with a bronze desk lamp by his friends in the association.

* * *

Colonel S. Lyle Cummins, C.B., C.M.G., M.D., LL.D., A.M.S.(Ret.), the David Davies professor of tuberculosis at the Welsh National School of Medicine, and principal medical officer of the Welsh National Memorial Association, will deliver on Friday evening, October 22, at the New York Academy of Medicine the 1926 Hermann M. Biggs Memorial Tuberculosis Lecture. His subject will be Clinical Differences in the Course of Tuberculosis Seen in Various Age Groups and Races. The address is to be given under the joint auspices of the Medical Society of the County of New York and the New York Tuberculosis and Health Association. The lecture is given annually under the terms of an endowment created by Mrs. Frances R. Biggs in memory of her husband, the late Health Commissioner of the State of New York.

* * *

The Medical Society of the County of Erie and the Buffalo Academy of Medicine joined in a memorial meeting in honor of the late James A. Gardiner on October 6th. The meeting was held immediately following the stated meeting of the Buffalo Academy, at which Dr. Francis I. Carr. F.A.C.S., spoke on Fractures in General.

* * *

The National Association for Music in Hospitals announces that it has received sufficient donations from public spirited women in New York City to enable them to train and send musicians to institutions requiring this service. Free scholarships are offered. Information may be obtained at the association's headquarters at the Steinway Building, West Fifty-seventh Street.

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The New York and New England Association of Railway Surgeons will hold its thirty-sixth annual meeting at the Hotel Commordore, October 22d-23d.

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The beautiful new building of the New York Academy of Medicine, located on the south east corner of Fifth Avenue and 103d Street, is nearing completion.

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The Pennsylvania Tuberculosis Society has appointed Dr. William P. Brown medical secretary. Dr. Brown has been occupying the position of medical director of the county sanatorium and assistant director of the bureau of tuberculosis in Cattaraugus County, N. Y. where he has been helping to conduct the five year demonstration of the Milbank Memorial Fund and the New York State Tuberculosis and Health Committee.

* * *

The Adirondack Fund for the Tuberculous has recently broken ground for the new sanitarium to be known as the Northwoods Home of the Fund. Colonel Walter Scott of New York was master of ceremonies. Special cars from New York brought a theatrical group among whom were the vaudeville artists who appeared later in a big benefit performance staged at the new Palace Theatre at Lake Placid for the benefit of the sanitarium fund.

* * *

The Commonwealth Fund, established by Mrs. Stephen V. Harkness, is making studies in eleven northern and midwestern states to determine the proper location of the third rural hospital to be constructed under the cooperative program instituted by the Fund last winter. The first of the hospitals is to be at Farmville, Va., and the second will also be in the South, although the exact location has not yet been chosen. In planning the third hospital, correspondence is being carried on with many cities and towns of the North and Northwest. When applications are approved, the Fund will donate two thirds of the cost of construction and equipment, and the chosen community will be responsible for one third and upkeep.

Book Reviews

PEDIATRICS

Diseases of Children. A Short Introduction to Their Study. By Hector Charles Cameron, M.A., M.D. (Cantab.), F.R.C.P. (Lond.). Oxford Medical Publications. London and New York: Humphrey Milford (Oxford University Press), 1926. Pp. ix-199.

The purpose of this little pocket edition of a book on children's diseases is admirably expressed by the common purpose of the books of the Oxford Medical Handbooks, namely, "to deal shortly with the fundamental principles which underlie their subjects, and to illustrate these by their applications in general practice. They are in no sense to be regarded as short textbooks, but as giving a general survey, on broad lines, . . . and of their relations with each other."

Instead of following the manner of the usual textbook in giving the etiology, pathology, diagnosis and treatment of disease, the author hits the high points of pediatrics and emphasizes those that require special study. The style is lucid and most engaging. This book may unhesitatingly be recommended to medical students as an introduction to pediatrics and also to advanced students as supplementary reading. Even the general practitioner will be well rewarded by reading it, as it contains much that cannot be found in the more pretentious books on the subject. It presents an approach to the subject different from that usually followed and gives a wide perspective of the fundamental principles of pediatrics.

MEDICAL EDUCATION

Methods and Problems of Medical Education: Series 2-4. Division of Medical Education of the Rockefeller Foundation. 3 Volumes. Illustrated. New York: 1924-1926.

In presenting the second, third and fourth volumes of its Medical Education Series, the Division of Medical Education of the Rockefeller Foundation has followed the same plan and idea as were incorporated in its first. This is stated as the collecting and publishing from time to time of brief descriptions of clinics, laboratories, and methods of teaching in different parts of the world in order that the information in convenient form may be brought to the attention of those most interested, and with the hope that the material may be of assistance to those planning improvements in buildings and methods.

Series II contains a section by Dr. Milton J. Rosenau entitled The Sanitary Survey as an Instrument of Instruction in Medical Schools, followed by a detailed sanitary survey of Rochester, New Hampshire, made in 1922 by Shields Warren. The Third Series contains illustrated descriptions of the Department of Physiology and of the Molteno Institute for Research in Parasitology of the University of Cambridge, England; the laboratories of physiology of the Harvard Medical School; the Physiological Institute of the University of Groningen; the Departments of Physiology and of Pharmacology, and the Laboratory of Anatomy of Western Reserve University; the Department of Anatomy of the University of Leiden; *die Dr. Senckenbergische Anatomie der Universität Frankfurt am Main; l'Institut d'Anatomie et l'Institut d'Histologie de l'Université de Strasbourg;* the Pathological Institute of McGill University; the Departments of Pharmacology, of Biochemistry and of Surgery of Peking Union Medical College; and the Department of Physiological Chemistry of the Yale University School of Medicine. Series Four consists of a detailed and fully illustrated description of the record room, unit history system, and follow up system of the Presbyterian Hospital of the City of New York. The preface states that Professor W. W. Palmer, physician in chief of the Presbyterian Hospital and professor of medicine in Columbia University, assisted in preparing this publication. The section on the unit history system is by Dr. H. Auchincloss, visiting surgeon to the hospital, and the section on the follow up system by Dr. James H. Corscaden, assistant consultant in gynecology. An appendix gives a reproduction in facsimile of one typical unit history.

SPINAL CORD TUMORS

Tumors of the Spinal Cord. The Symptoms of Irritation on and Compression of the Spinal Cord and Nerve Roots. Pathology, Symptomatology, Diagnosis and Treatment. By Charles A. Elsberg, M.D. 354 Illustrations. New York: Paul B. Hoeber, Inc., 1925. Pp. 421.

No more logical person could have been selected to write a classic on spinal cord tumors than Dr. Elsberg. In this book he has done all that could be expected. His approach has been most painstaking. Pathology, function, historical approach and differential diagnosis have all been well rounded out and carefully balanced. The material has been carefully compiled from clinical cases and a hundred cases have formed the basis of his material. Much original research work has been incorporated in this volume. The diagrams and illustrations are carefully done and well reproduced. A complete bibliography is appended.

THE DUODENAL TUBE

The Duodenal Tube and Its Possibilities. By Max Einhorn, M.D., Professor of Medicine at the New York Postgraduate Medical School. Second edition, revised and enlarged. Illustrated. Philadelphia: F. A. Davis Company, Publishers, 1926.

In this country, few writers have written more about the duodenal tube than Einhorn, so much so that the instrument and the author are almost instinctively associated. After describing the duodenal tube and its congeners, the analysis of the duodenal contents is discussed, and the diagnostic import of the duodenal tube is emphasized. The duodenal tube may also be used for therapeutic purposes, as for alimentation, the instillation of fluids and gases, lavage and instillation of remedies. It also has a surgical value.

In addition, the author also describes other instruments for the pylorus, duodenum, and small intestine, such as the pyloric dilator, the infantile dilating pyloric catheter, the pyloric dilator and diaphane, the pyloric dilator and aspirator, the double balloon pyloric dilator, the duodenal obturator, the intestinal delineator, the sectional intestinal examiner, the simultaneous gastroduodenal aspirator, the intestinal tube (jointed), and the gastric introducer, together

with the practical use of these new instruments in diagnosis and treatment.

The book is well written and illustrated and is an excellent monograph on duodenal diagnosis and treatment. It is an authoritative treatise that ought to be followed by any one who treats gastrointestinal diseases.

NEURITIS AND NEURALGIA

Neuritis and Neuralgia. By Wilfred Harris, M.D. London and New York: Oxford University Press, 1926. Pp. 418.

Too little is known about these maladies, which are often elusive and baffling. On the whole, the present status of these conditions is far from satisfactory. Some may welcome any attempt to secure additional information in this field, although much familiar ground may be gone over. Harris has based his work on many hundreds of cases, and has also presented some theoretical considerations regarding the taste fibres. The entire body has been covered, with especial emphasis on the facial area. On the whole the author has done a most commendable piece of work.

INFLUENZA

A Treatise on Influenza. With Special Reference to the Pandemic of 1918. By Rajendra Kumar Sen, With a Foreword by Dr. S. R. Harrison, M.R.C.S. (Eng.), L.R.C.P. (Lond.), North Lakhimpur, Assam. Published by the Author, 1923.

This monograph is a compilation of a great deal that has been written on the subject of influenza. Considering that it emanates from India we ought, perhaps, to be charitable in criticism, but it can in no way compare with the treatises on the subject written by European or American authorities. For the American physician it can have no interest.

INFIBULATION

Male Infibulation. By Eric John Dingwall, M.A. London: John Bale, Sons & Danielsson, Ltd., 1925. Pp. 145.

This work represents a comprehensive survey of what little is known of various forms of male infibulation. The author has presented the results of considerable research and the work should prove a valuable reference book for anthropologists, and those who are interested in symbolic sexual manifestations. There is much that is not known of the origin of these practices which may be cleared up in the future.

THE CRYSTALLINE LENS

Semiologie Oculaire. Le Cristallin. Anatomie, Physiologie, Pathologie. Par Felix Terrien. Illustrated. Paris: Masson et Cie, 1926. Pp. 240.

This is a well written monograph on the anatomy, physiology and pathology of the crystalline lens. Excellent illustrations give graphic pictures of its normal and abnormal structure, as well as of its embryological development. It is interesting to have recalled to mind that Descartes was the first to describe the mechanism of accommodation. The author's chapters on the physiology of accommodation and convergence are exceptionally thorough. In the third part of the book he discussed troubles of accommodation, cataracts, traumatic injuries and displacements of the lens. The sections on treatment are sound and conservative. It is regrettable that the bibliography is so scanty.

ECZEMA

Sanitätsrat Dr. Jessner's Dermatologische Vorträge für Praktiker. Heft 14 und 16. Diagnose und Therapie des Ekzems. Von Sanitätsrat Dr. S. Jessner, Königsberg i. Pr. 3. verbesserte Auflage. Leipzig: Verlag von Curt Kabitzsch, 1926. Pp. 173.

This is the third revision of a very practical little monograph on the diagnosis and treatment of eczema, which ought to be very valuable to the general practitioner. The hints on diagnostic and therapeutic points are eminently practical. In the treatment much is made of the usual and reliable drug therapy, both local and general. The newer German drugs are mentioned with their indications. However, irradiation therapy, in the form of röntgenotherapy, radium and mesothorium irradiation, heliotherapy, quartz lamp irradiation, and Finsen light treatment are discussed briefly.

PSYCHOLOGY

The Meaning of Psychology. By C. K. Ogden. New York: Harper and Brothers, 1926.

This is the first book that has come to the attention of the reviewer which is worthy of the title "psychology." It is academic in approach but not tied to tradition. Ogden's findings are sound, simple, valid. He is unafraid, yet unbiased. He favors no school yet selects fearlessly and presents his material in a lucid straightforward manner. The book would be a splendid one as a text in colleges. The physician who desires a working knowledge of modern psychology without struggling through a maze of technicalities can do no better than read this book.

PUBLICATIONS OF THE PATHOLOGICAL INSTITUTE OF THE UNIVERSITY OF HELSINGFORS

Arbeiten aus dem Pathologischen Institut der Universität Helsingfors (Finland). Begründet von Prof. emer. Dr. E. A. Homén. Herausgegeben von Prof. Dr. Axel Wallgren. Neue Folge. Vierter Band, Drittes and viertes Heft. Mit 82 Abbildungen im Text und 7 Tafeln. Jena: Verlag von Gustav Fischer, 1926. Pap. 227-458.

In this number A. Wallgren discusses the eosinophile leucocyte morphologically, morphogenetically and physiologically, as seen in dark field illumination. H. Castrén discusses the structure of the cells of connective tissue tumors in man. J. J. Chydenius writes about the structure of the corpus luteum cells in man and its changes during the menstrual cycle and during pregnancy. These three articles are rather technical histological studies of little value to the general practitioner. Some excellent photomicrographs of the cell structures studied are given.

Of a more practical nature is the article by O. Holsti on the gastrointestinal tract in arthropathies, nephropathies and cardiopathies. This author found that in healthy individuals inflammatory processes are rarely found, whereas phlebopathies are observed even at an early age. In cases of arthropathies, nephropathies and cardiopathies (as also in various other fatally ending diseases) regressive, cirrhotic and inflammatory processes are usually found in the different part of the gastrointestinal tract, although of varying intensity. During the acute phase of these groups of diseases there are relatively marked inflammatory changes, but in the chronic cases the changes are of a various nature even in the same disease, consisting sometimes of regressive processes in the

parenchyma and in increased connective tissue, and sometimes, in addition of inflammatory processes of varying intensity. Sclerosis of the veins is more frequent and not rarely more intensive than normally. Certain arthropathies are encountered more often than in other diseases. The inflammatory lesions in the gastrointestinal tract are usually considered as fresh secondary processes either of the arthropathies, nephropathies and cardiopathies, or of the processes associated with the exacerbations in the upper air passages. Other lesions in the gastrointestinal tract, however, seem to indicate that they are of longer duration and that they have probably preceded both the occurrence of the arthropathies, nephropathies and cardiopathies and their associated processes in the upper air passages. In this respect there seems to be exist a vicious circle.

EPILEPSY

The White Spots of Epilepsy and Other Phases of the Disease. By Edward A. Tracy, M.D. Boston: Richard T. Howard, 1926. Pp. 129.

This is a study of dermatological vasoconstriction in relation to epilepsy as a diagnostic aid and a plea for earlier recognition of epileptic conditions among children.

CONRAD IN THE HOME AND IN THE CONGO

Joseph Conrad as I Knew Him. By Jessie Conrad. London: William Heinemann, Ltd., 1926.
Joseph Conrad in the Congo. By G. Jean Aubry. Boston: Little, Brown & Co., 1926.

In no country of the world is the art of Joseph Conrad Korzeniowski more admired than in America. Therefore two lives of him which have been published recently will no doubt be read more widely in this country than in any country. The first of these is *Joseph Conrad as I Knew Him,* by Jessie Conrad, his widow, and gives the intimate life of this genius.

It strikes one as somewhat ironical that Conrad, who shrank from personal publicity, who was seldom if ever interviewed, who never wrote for the papers or had his photograph taken, and who in a preface to one of his books said that an artist should not appear before the public *en pantouffes,* should be subjected to a scrutiny more personal than many artists have been subjected. But it is human nature a failing it may be, to be curious concerning the most trivial details of the lives of our great men and death generally opens the door to the satisfaction of this legitimate curiosity. Mrs. Conrad, than whom no one can be better fitted to tell of Conrad's private and personal life, does it extremely well. Also it is quite in the proper order of things that Mrs. Conrad, who really knows, should be the narrator, than that a writer perhaps avid of reflected fame should "tickle the palate" of an undiscerning reading public by "yarns" drawn mainly from his own imagination or from hearsay. Such has been the unhappy fate of more than one great writer.

Conrad was not only a genius, with most of the eccentricities of genius, but he was also the victim of bad health. He seems to have inherited the uric acid diathesis, was very dyspeptic, and consequently irritable. He was not only a reserved man but of a highly sensitive and neurotic nature and given to fits of abstraction and nervous excitability. At meal times, even when guests were present, when interested in the conversation, he was addicted to the habit of rolling pieces of bread into pellets with which he bombarded guests, family, and food indiscriminately.

However, it is a book for lovers of Conrad to read as amid its domestic trivialities a remarkable pen picture is presented of the moody, but chivalrous and courteous Polish nobleman and sea captain who gave to the world the most amazingly vivid tastes of the sea and adventure written, on the whole, in the best English ever put to paper in the writing of fiction.

It must be remembered, too, that Conrad was an expert psychologist, his depiction of men and women and their unconscious motives was masterly and this is a reason why his life at home and in the Congo is reviewed in a medical journal. *Joseph Conrad in the Congo* is by G. Jean Aubry, and is a record of an expedition which Conrad made to the Belgian Congo in a French steamer. Conrad himself kept a diary of his Congo experiences, and M. Jean Aubry has taken the trouble to scrutinize and amplify every detail therein with the object of discovering if possible how far actual facts entered into the making of *Heart of Darkness.* There is little doubt, however, that the gruesome sights Conrad witnessed in the Congo had a great effect on him spiritually and mentally while the climate of the tropics undermined his health.

That a man who for twenty years sailed the oceans of the world and saw sights which the sailor sees, should have lived the later years of his life in a secluded village of Kent, where he recreated scenes, people and happenings shows of what mettle he was made. But it is all explained when it is said that he was a genius.

RESEARCH WORK AT THE MAYO CLINIC

The Collected Papers of the Mayo Clinic and Mayo Foundation. Volume XVII, 1925. Philadelphia and London: W. B. Saunders Co., 1926.

As stated in the foreword of the volume, these papers are intended "to suit the needs of the general surgeon and the general physician." This, of course, does not mean that the whole range of medicine has been covered, but it does signify that information, both medical and surgical, most recently subjected to experimental and clinical research at the Mayo Clinic, has been collected and presented in a most instructive and critical manner within a volume of 1078 pages. The subjects presented are amply illustrated and fortified by photographic evidence as well as rigid experimental controls. References to other writers, at times exhaustive, are appropriately appended. Especially striking are the papers dealing with the Hepatic Functions in Health and Disease, by Charles H. Mayo and F. C. Mann, etc., and The Function of the Thyroid Gland, by H. S. Plummer. The diseases of the alimentary tract and urogenital organs are dealt with both from a medical and surgical point of view. Other subjects considered are conditions of the blood and circulatory organs, the chest, the cerebrospinal centres, etc. In the chapter dealing with miscellaneous subjects the specialist will find many things of interest.

The volume is supplied with an ample bibliographic index as well as one of subjects.

Medicoliterary Notes.

The recently issued twenty-third annual report of Bellevue and Allied Hospitals reproduces the architect's proposed plans for a new hospital and grounds.

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Labor and Industry, the publication of the Department of Labor and Industry of Pennsylvania devoted its August issue to describing the Pennsylvania plan for industrial accident reduction.

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Thomas A. Watson, whose antobiography, *Exploring Life*, has just been published by D. Appleton & Company, was the first man ever to hear words spoken over a telephone. He was assisting Alexander Graham Bell in his experiments when he heard the latter's voice utter the words, "Come here, Mr. Watson, I want you." Mr. Bell was in another room and the words came through the apparatus with which the two men had been experimenting.—*N. Y. Times.*

* * *

Prof. Albert Calmette, well known tuberculosis expert, has been instrumental in establishing at Kindia in French Guinea a branch of the Pasteur Institute devoted exclusively to experimental work with monkeys, according to the *Science News Letter*. Families of monkeys are here bred and reared under conditions as much as possible like their native haunts. The experimental work with monkeys in tuberculosis has been especially successful. It had been found that this could not be done in Paris because the monkeys sickened and died in the city atmosphere and surroundings. It is stated that the monkeys at Kindia are not harmed by Calmette's anti-tuberculosis vaccine, and that they do not contract the disease, even when isolated with patients in extreme stages. The immunity lasts more than a year, and can be renewed by fresh dosage.

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A review of our mortality records from June 5th to August 28th of the current year reveals that there are 221 accidental deaths by drowning, according to the New York City Department of Health's *Weekly Bulletin*. "In the last analysis, man is a land animal," says the report, "and when in the water he is out of his medium. More careful patrol of our beaches and shores by police and beach guards would unquestionably help to reduce the number of accidents and it may even be desirable to enact laws forbidding reckless swimming. At any rate, a record of 221 deaths by drowning represents a condition meriting the attention of agencies concerned with the safeguarding of public health."

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A giant salamander thought to be almost 150 years old was recently presented to the Prince Regent of Japan by the head priest of a temple near Asakura, according to press reports. The amphibian is more than four feet long and has been living in a pond in the temple grounds for more than 130 years. This is the first time that an amphibian has been recorded as having had so long a life.

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Public Health Reports for September 17th is devoted especially to the 1925 statistics of notifiable diseases reported throughout that year in the larger cities of the country.

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"Want to be a Physician? Talk it over with 'Doctor Will' Mayo," is the title of an article by Esca G. Rodger in the *American Boy* for October. Much sensible and practical advice and information about the average physician's life and work is given in clear, simple language in the form of an interview with Dr. Mayo of Rochester, Minn.

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Dr. Harold D. Judd of Detroit has recently made a study of one hundred serious automobile casualties, in cooperation with the Detroit police department, and has come to the conclusion that poor minds rather than poor eyes are the cause of most of the accidents. "A man with only 50 per cent. visual efficiency and a 100 per cent. mentality," Dr. Judd is quoted as saying, "would make a more careful driver than the man with perfect eyes and half mentality. Observation has shown also that the man with perfect eyes and full intelligence is liable to be more careless than the man who knows his eyesight is bad, but who is mentally normal." Out of the one hundred cases studied, Dr. Judd found only five unquestionably due to defective eyesight.

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To elaborate this same subject of automobile fatalities—a recent issue of the City Club of New York states—and the figures are confirmed by the reports of the Chief Medical Examiner—that 555 persons, 238 of whom were under fifteen years of age, were killed by motor vehicles on the streets of New York between January 1st and September 1st. During the month of June, fifty-four children were killed in the streets— nearly two a day. The total is a larger number of deaths than were caused by the Florida hurricane.

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Two articles of interest, both most attractively illustrated, in the *Nation's Health* for September are Paintings Provide Ideals for Beauty of Body and Spirit, by Catherine Beach Ely of New York City, and The Dusseldorf Exposition Emphasizes Germany's Health, by Dr. Georg M. Price medical director of the Joint Board of Sanity Control of New York City.

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John Erskine, author of *The Private Life of Helen of Troy*, will take Sir Galahad as his next subject. His book, entitled *Galahad; Enough of His Life to Explain His Reputation*, will be published in November by the Bobbs-Merrill Company.

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Two late publications from the press of Clark University are A Study of Natio-Racial Mental Differences, by Nathaniel D. Mitron Hirsch, and Criminal Intelligence, by Carl Murchison. The latter is a study based upon results of giving psychological tests to seven thousand criminals in penitentiaries of the United States.

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The tomato is the one new salad ingredient added by modern times to the art of the cuisine, according to a recent report of British food experts. The Egyptians used onions and garlic in their salads in large quantities, Confucius liked cucumbers, the Persians used lettuce and radishes, with a sour wine for dressing; and the ancient Chinese mixed with their very elaborate salads mustard, watercress and nasturtium leaves, with hard boiled eggs.

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The World List of Scientific Periodicals Published in the Years 1900-1921, recently issued by the Oxford University Press, contains as a supplementary section a valuable alphabetical list of international congresses and other international organizations, with their various publications.

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The first issue of the *Annales de l'Institut d'Actinologie* has been announced by its publishers to consist of 150 pages, with seventeen original contributions, 140 analyses, and fourteen special plates in addition to those included in the text.

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The Soviet Government has appropriated about $35,000,000 to prevent famines in the Volga district. Attempts are being made on experimental farms to find the best system of crop raising to offset the disadvantages of the irregular rainfall of the region. The average precipitation is only sixteen inches a year—about the same as that in Utah.

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Rejoicing over the lengthening of the average span of life from forty-one to fifty-six years during the last few decades should be tempered by the fact that the death rate in the age group above forty is increasing, according to the *Science News Letter*. Dr. J. Howard Beard, of the University of Illinois, made this statement recently in warning students of the need of better health. "The gain in the expectancy of life is almost entirely due to the saving of lives under thirty-five by the better control of communicable diseases and by infant welfare work," he said. "At the ages of forty-five to fifty, there are four more deaths per thousand than twenty years ago; at fifty to fifty-five, six more; and at fifty-five to sixty, eight more." There is a real danger that the net gain in lives saved from infection will be lost because of the increasing number of fatalities from accidents. Dr. Beard believes. "Whether or not the average length of life shall continue to rise will be determined by how much each person will permit science, education, and religion to influence his habits, control his desires, and direct his action," Dr. Beard added in conclusion.

Abstracts from Current Literature

GENITOURINARY DISORDERS

Diathermy in the Treatment of Prostatic Obstruction.—T. E. Hammond (*British Medical Journal,* January 16, 1926), reports that the application of diathermy is useful in certain cases of prostatic obstruction. It should not be employed in the adenomatous prostate where such good results follow enucleation. It should be reserved for the large and small fibrous prostates and the atrophied prostate. Its application in these cases leads to a better functional result and a lower mortality than after prostatectomy.

So far as the clinical selection of cases suitable for diathermy is concerned, little difficulty will be experienced in the small fibrous and the atrophied prostates. When a rectal examination is performed in the latter, the finger comes up against the posterior wall of the pubis, the hardness of which may lead to the impression that one is dealing with a malignant prostate. The examination carried out with a metal bougie in the urethra enables this error to be avoided. With the large fibrous prostate a careful cystoscopic and rectal examination is essential, and sometimes the differentiation between this and the adenomatous enlargement is by no means easy. The fibrous prostate is somewhat former, and on rectal examination there is not that projection backwards into the rectum, nor on cystoscopic examination into the bladder, which is found with the adenomatous prostate.

Cautery Circumcision.—Isaac G. Duncan (*Urologic and Cutaneous Review,* April, 1926), recommends cautery circumcision in cases of chancre, chancroid and neglected gonorrhea, when accompanied by a redundant prepuce, which are usually complicated by a very severe balanitis or balanoposthitis, preventing the retraction of the foreskin. When due to gonorrhea or an infected chancre, palliative treatment often suffices, but the chancroidal infections not infrequently must have a more radical treatment.

The technic is as follows: The incision is made through healthy tissue under nerve block anesthesia, all of the infected area being cut away even though the skin is left rather short and the mucous membrane is also trimmed off close to the penis, so as to prevent leaving any folds or pockets harboring infection. The entire raw area is gone over lightly with a cautery, with special attention to the margins of the skin and mucous membrane, and if an ulcer be present on the glands penis it also is thoroughly cauterized unless it is situated in or too near the meatus. No sutures or ligatures are used. After the denuded surface has been sponged off with alcohol, it is dressed with an alcoholic solution of picric acid, and after with Ochsner's solution. Healing usually takes place within three or four weeks.

Minor Surgery of Prostate Gland.—M. Stern (*International Journal of Medicine and Surgery,* 39:2), presents a method of relieving prostatic obstructions by partial resection similar to what has been accomplished with the punch method, but which differs from this procedure in many ways and offers a more extensive field of usefulness. To date the results have been good. The method is described as follows: To reduce the problem to a mere cystoscopic procedure permitting of an exact operative technic and the removal of any desired number of sections at a single sitting has been my aim. This in turn resolved itself into two requirements: a, a current possessing certain new qualities, and b, a cystoscopic instrument for its application.

After much technical work and experimentation a cystoscope has been perfected which visualizes unusually large areas of the operative field. It is provided with a small movable ring or loop of tungsten wire which when actuated by a suitable high frequency current is capable of removing, without causing hemorrhage, longitudinal spaghetti like sections of tissue directly under the guidance of the eye and in a water medium. This author named the resectoscope.

The fact that the current employed, besides possessing certain other qualities, can be delivered in a continuous flow through water is the one important feature in making a cystoscopic procedure possible. This current is similar to other high frequency currents heretofore employed for severing tissue, but differs in that, firstly, it will actuate a cutting loop under water and, secondly, it does not arc or jump across a gap. The first of these characteristics makes a cystoscopic procedure feasible and the second eliminates the disadvantages of the socalled fulguration effects. These are irregular sparking and uncontrolled deep penetration resulting in slough formation and possible secondary hemorrhage.

After the instrument has been inserted and a thorough examination with the indirect vision telescope has been made, it is replaced by the working parts containing the direct vision telescope.

The part to be resected is then caused to engage in the fenestrum, which is seen as it bulges rather suddenly into the field and can be felt as a distinct resistance or "hang" to backward or forward motion of the instrument.

The cutting loop is in position just in front of the eye of the telescope and rests against the engaged tissue. The current is then turned on either with a foot switch or by an assistant. Its action is observed in about five seconds by the formation of a small arc or halo around the loop as cell disintegration commences. The loop is then advanced at just the rate of speed necessary to maintain the halo until it has traversed the full length of the fenestrum through the tissue contained therein.

Should the advance of the loop be made at a speed greater than the molecular disintegration of the cells requires, the arc will be lost and the cutting action suspended. This happy peculiarity is due to force and pressure which should not be employed, the passage of the loop through the tissue being entirely due to the disintegration of the cells in its path. Practice in controlling the speed of the cutting thrust should be obtained on pieces of meat in a bowl of water. Experience thus obtained is of extreme importance as it is undesirable to cause desiccation. If a correct technic is employed the cut surface will be but little altered in color.

When the loop rests lightly against the tissue before the cutting thrust begins, a small luminescent ring is seen which, with practice, can be maintained through the entire cut. This is the ideal degree of arc formation, and with it, clean sections of tissue can be removed with no visible charring in the resulting gutter formation and absolutely no hemorrhage. Thus, at a single operation, it is possible to cut as many gutters as may be desired, there being no blood to interfere with clear vision.

Posterior Gonorrhea.—L. L. Michel (*International Journal of Medicine and Surgery,* 39:2), outlines his treatment of posterior gonorrheal infections under two headings, viz., local and general treatment. In the main, the treatment is preventive, and the preventive measures are gentle manipulation, proper drainage, mild solutions of nonastringents used in irrigation, and care not to do too much.

Local treatment.—In every case of posterior gonorrheal urethritis he uses the irrigations of protargol. The earlier these irrigations are used the quicker will the infection be controlled. In the acutely inflamed prostate or vesicle, where protargol is too irritant, the solution is changed to argyrol or neosilvol. In chronic infections of the posterior urethra where instrumentation is necessary, this should be preceded by irrigations of protargol solution. In epididymotomy an incision is made over the inflamed epididymis; the tunica is opened allowing the escape of a turbid serum; the fibrous coat of the epididymis is then incised, using care not to injure the substance. The fibrous coat is now stripped from the epididymis as far as the inflammation extends. A blunt probe is used for any area containing pus or exudates; a turbid serum is usually found. A small rubber dam is placed for drainage and left for about twenty-four hours. The operation is done under local anesthesia by infiltration of the cord and nerve blocking. There is no risk in this operation, and its results are immediate.

General treatment.—1. Hygiene. 2. Sodium iodide: This is used intravenously in patients with a posterior gonorrheal infection if there exists a tumefied inflammation such as one finds in the prostate and epididymis. It does not relieve the pain of an acute prostatitis or epididymitis, but it sometimes causes response in the acute arthritides of gonorrhea. 3. Iron and arsenic: given intravenously as tonic medication, if needed. 4. Vaccines: given immediately, subcutaneously at first, and later intravenously if there is no response to the first method. The autogenous vaccines are essential. Frequent phenomena follow upon the use of non specific proteins with reactions. Pus discharges cease and all evi-

dence of the gonococcus disappear. So much so is this a fact that I take advantage of it in persistent gonococcic infections or when it may be necessary to hurry a cure. Incidentally in women when this treatment is used I have never known the infection to spread beyond the cervix. 5. Heat therapy: gratifying results are obtained by the use of the psychrophore. 6. Diathermy: fine results have been obtained with diathermy. I use it in all posterior infections, in acute epididymitis and the arthritides. I can derive surer relief from its application than from any other form of treatment I know. It is a specific for the pain of acute epididymitis, and preferable to surgical procedures directed toward relief of pain.

Obstructions of the Upper Ureter.—C. H. Peck (*Annals of Surgery,* 83:2) advocates splinting of the ureter as a useful adjunct to operative procedures for the relief of upper ureteral obstruction and early hydronephrosis, especially in the type with hooded pelvis and valvular obstruction at the pelviureteral junction. It is also useful in forms of painful obstruction, without dilated pelvis, usually in conjunction with probe dilatation of ureteral stricture and nephropexy. In pyelitis with obstruction which has resisted conservative treatment, with or without a dilated pelvis, it may aid subsequent drainage enough to save a kidney threatened by damaging infection. The procedure is simple, adds nothing to the operative risk and causes no damage to the ureter if the splint is removed within five or six days.

Catheterization of the Ejaculatory Ducts.—H. C. Rolnick (*Surgery, Gynecology and Obstetrics,* 42:5), feels that catheterization of the ejaculatory ducts is a difficult procedure; most attempts fail. Fluid injected through the ejaculatory duct reaches the seminal vesicle first and not the ampula of the vas. The ampulla of the vas deferens does not communicate directly with the ejaculatory duct, it enters the neck of the seminal vesicle. It is not possible except in a small number of cases to force fluid beyond the seminal vesicle into the ampulla through the ejaculatory duct. Manipulations designed to insert a needle into the vas deferens usually fail and are at best blind maneuvers. Medication of the seminal vesicles through the ejaculatory ducts seldom accomplishes its purpose, for the ampulla of the vas deferens which is always equally involved in the pathological process can be injected in only a limited number of cases.

Kidney Infection.—P. W. Aschner (*American Journal of Surgery,* 40:5), says that in the differential diagnosis the attenuated infections offer the greatest problem and Dr. Beer has suggested the use of staphylococcus vaccine to activate the lesion much as tuberculin is employed for diagnosis. In the very young and in the old the disease may prove fatal because of the development of bacteriemia, embolic phenomena, and peritonitis. The cases complicated by anterenal suppuration and prostatic abscess, and those with diffuse suppurative nephritis are the most dangerous.

The acute cases with frank perinephric suppuration require only incision and drainage of the perinephric abscess. The cases of cortical abscess and carbuncle require not only drainage or excision of the abscessed area but also decapsulation of the kidney so that other foci may be uncovered. If a widespread infection of the parenchyma is found and the septic phenomena are not relieved by conservative procedures, the kidney should be removed, particularly if a bacteriemia persists. Constant watch for metastatic foci must be observed.

Hemostasis in Suprapubic Prostatectomy.—V. C. Hunt (*Annals of Surgery,* 83:2), says that according to his experience the Pilcher bag accomplishes complete hemostasis, as evidenced in most instances by clear urine at all times after operation, and the persistence of clear urine after removal of the bag within twenty-four hours, except in about four per cent. of cases, in which temporary reinflation was necessary. A gauze pack, on the other hand, while usually quite adequate for controlling bleeding, allows a variable amount of blood to ooze into the urine for several days, and often after the pack has occupied the prostatic capsule for several days its removal precipitates bleeding of different amounts, at times to the extent of severe hemorrhage. The bag, in its deflation, simply drops away from the prostatic capsule and has no tendency to precipitate bleeding. Secondary hemorrhage, after the bag had been used, occurred from the fifth to the ninth day in but seven cases, one of which was after partial prostatectomy for carcinoma.

As a result of the early removal of the suprapubic drain, with early institution of drainage of the bladder by urethral catheter, made possible by the Pilcher method of hemostasis, seventy-five per cent. of the wounds healed without suprapubic urinary drainage and they healed earlier. In those cases in which the Pilcher bag was used and the suprapubic tube removed early, healing of the wound occurred on the average in but three fourths the time required when gauze was used to control bleeding and suprapubic drainage was prolonged.

The physical and organic reserve of the patient with prostatic obstruction should be improved by preliminary treatment to insure safety in operating. As Bugbee has stated, removal of the prostate is but an incident. However, it is a most important incident and requires for its successful accomplishment visible procedure when possible and accurate hemostasis.

Studies on the Bacteriology of the Urine in Cooperation with Catheterization of the Ureters.—Robert A. Keilty (*Journal of Laboratory and Clinical Medicine,* April, 1926) report laboratory studies of urine in 162 cases examined by cystoscopy and ureteral catheterization, including bacteriological and microscopic results, as well as a clinical survey of the cases from the diagnostic viewpoint. The cases are divided into three groups, 1, those with clearcut symptoms in which the laboratory merely confirms, as for example, the findings of streptococcus in a ureteral urine where the x ray has already shown a stone; 2, those in which there are symptoms, for example, pus in the urine, where the laboratory makes a diagnosis of Bacillus coli cystitis; 3, those in which there are vague symptoms, and the laboratory findings complete the negative side of the clinical examination, thus eliminating the urinary system. An extensive review of fifty of the cases is made. While the routine use of the cystoscope and ureteral catheter is not advocated, it is suggested that its more frequent use where the urine is studied bacteriologically would clear up an otherwise obscure diagnosis, would eliminate the kidney or bladder as offenders, or would accurately establish a diagnosis strongly suggested clinically.

Focal Infection and Its Relationship to Nonsurgical Disease of the Genitourinary Tract.—Elmer Hess (*Urologic and Cutaneous Review,* January, 1926) asserts that it is beyond any question of doubt that foci of infection, in whatever part of the body located, cause systemic disturbances, and when they do, they should be removed or drained. However, even though an original focus of infection has been the primary cause of the systemic disturbance, its removal does not cure the condition because permanent damage has been done to the part involved. The author believes that the real danger of focal infection is not the socalled rheumatic arthritis, but the constant wearing attack on the cardiovascular renal mechanism and particularly upon the urinary part of the system.

The poisonous material may be either the toxins of the bacteria or the bacteria themselves, and it is the kidneys that must suffer the brunt of any elimination from the blood stream. Normal kidneys very often carry on this elimination unimpaired by the poisons that filter through their parenchyma unless the burden becomes too great. Let the kidney fall below par and the damage starts. The diseases of the urinary apparatus caused by focal infection are: 1, nephritis of all types; 2, pyelitis; 3, ureteritis; 4, prostatitis and seminal vesiculitis. The surgical kidney is left out of consideration here.

If the infection becomes overwhelming in nephritis, the acute hemorrhagic type (streptococcic infections, of which scarlet fever and streptococcic sore throat are striking examples) is encountered, or the process may simply be a degenerative one with gradual destruction of the renal cells (toxic type), or there may be added small petechial abscesses with subsequent scarring of the renal parenchyma and lowering of renal function (staphylococcic infections or mixed infections). In all of these grades and degrees of nephritis, the tonsil, tooth or the sinus is a very likely starting point for the trouble. The treatment is the systematic eradication of all focal infections and the care of all complications.

Pyelitis is the most unrecognizable pathological condition in the body. It is usually complicated by more or less involvement of the renal tubules and ureteritis. It is always infectious but it must also have a local cause, usually obstruction in the urinary tract below the seat of infection

anywhere from the external urinary meatus to the ureteropelvic junction. The infection is usually hematogenous, but it may also be ascending from the lower urinary tract or via the lymphatics. Although the urine may be negative, microscopically it shows pus cells. There may also be normal urinary findings with obstruction of the ureter. The treatment includes removal of the obstruction and institution of drainage and the care of the focal infection. With pyelitis there is almost always also a partial or complete concomitant involvement of the ureteral mucosa, and the treatment is identically the same.

Prostatitis and seminal vesiculitis are usually attributed to a gonococcal infection, and the author believes that the invasion of these organs is very often by organisms that have travelled either by the hematogenous or urinary routes to these organs. These organs often become secondary foci of infection and even though the primary focus (tonsils, teeth, etc.) is cleaned up, the disease entity continues because these secondary foci are cleaned up and very often not suspected. Usually the secondary invader is the organism that causes the systemic disorders.

Concerning Radiotherapy of Prostatic Adenoma.— E. Legueu (*Urologic and Cutaneous Review,* April, 1926) had occasion to operate upon some prostatic patients who had been treated with radiotherapy. The results with x rays were variable but upon the whole they were not favorable, so that operation had to be resorted to. Usually the adenoma remained unmodified after the treatment. The author believes that in one case a cancer of an adenoma developed under the influence of the x rays. He has never seen any happy results from the use of x rays.

The crux of the situation is not whether radiotherapy has an influence upon the adenoma, but whether this treatment is of such a nature as to modify the prostatic disease, to arrest its progress and relieve the retention. The adenoma itself is not of exclusive importance in the genesis of troubles arising from retention. The concomitant alterations of the neck of the bladder play a considerable rôle, and even a predominant rôle in certain cases. And if radiotherapy does reduce the size of the adenoma it can only substitute in its place a hyperplasia of the fibrous tissue—it substitutes a sclerosis for an adenomatous hyperplasia and consequently renders the micturition still more difficult.

This treatment is usually applied for pollakiuria and acute retention, which are minor symptoms and usually subside, but not in chronic retention. It seems that radiotherapy only modifies certain unimportant symptoms accessory to the prostatic disease, but does not change the important symptoms nor even the course of the disease itself.

Until more information is available, the author considers radiotherapy as an insufficient method and at times dangerous, and not easily controlled or uniform. He considers it as an accessory method capable of modifying certain secondary symptoms of the disease, but incapable of modifying the general course, as compared with the curative methods.

Preparation for Prostatectomy.—H. C. Bumpus (*Surgery, Gynecology and Obstetrics,* 42:2) enumerates under this heading four main points: 1, duration and amount of obstruction; 2, indications for and against cystoscopy; 3, care and treatment of associated infection, and 4, restoration of impaired renal function to a point compatible with major surgical measures. Of these the last named presents the most important aspect of the preparation of patients with prostatic hypertrophy, many of whom endure urinary obstruction until the renal function as determined by the phenolsulphonephthalein test has reached the vanishing point and the urea content of the blood has reached over three hundred milligrams for each one hundred cubic centimetres. The establishment of adequate drainage is first undertaken. If the obstruction is complete and acute retention is present, great care must be exercised to empty the bladder gradually. To remove a few ounces at a time is dangerous, as this immediately reduces intravesical tension and so produces edema of the entire urinary tract. Such edema within the renal capsule results in diminished output of urine, and the patient is made worse rather than better. Several methods for the continuous gradual emptying of the bladder are in use, the simplest, and I believe the most satisfactory, being the one described by Van Zwaluwenberg. Usually from three to four days are sufficient for complete emptying. After the bladder is emptied the elimination of the retained toxic substances throughout the body is accomplished by the giving of large amounts of fluid and their elimination by sweating, purgation, and diuresis. A careful record must be kept of the fluid intake and output, a minimal output of two thousand five hundred cubic centimetres being imperative. If this cannot be maintained by the oral administration of fluids, subcutaneous or intravenous administration must be supplemented, preferably the latter, for repeated subpectoral infusions are most trying to the patient and their frequent administration results in costal pain that is most distressing. It has, therefore, been my practice to give one thousand cubic centimetres of physiologic sodium chloride solution daily intravenously until the desired results relative to urinary output are attained.

Following the administration of fluid, the patient is put daily in a hot pack and a profuse sweat induced. No method has proved as free from danger of burns and overheating as the large electric blanket. The patient can be completely wrapped in this and the current turned off as soon as sweating is initiated. Five or ten grains of aspirin, given just prior to the pack, or in refractory cases pilocarpine, is a useful adjunct.

If the patient tolerates a urethral catheter well the preparation may continue with this form of drainage until the urea content of the blood is below forty milligrams for each one hundred cubic centimetres. If the decrease has been slow and the patient's general condition poor with considerable loss of weight and strength, it is safer to perform a cystostomy and permit him to return home for a few weeks or months, as under home environment and food he gains far more rapidly than in the hospital, once adequate drainage has been established. The two stage operation has the advantage of insuring considerable diminution in the size of the prostate, since after the urethra is put at rest, the decrease in edema and engorgement reduces the size of the gland; also the amount of bleeding at the time of operation is much less. However, it compels a blind enucleation, a poor surgical procedure, bound to be followed by a certain number of inferior functional results.

To undertake cystostomy before the urea content of the blood is below one hundred milligrams for each one hundred cubic centimetres is to diminish materially the possibility of the patient's recovery, as so reduced a renal function will frequently not bear the added load imposed by the operation.

Diagnosis by Pyelography.—J. Willan (*British Medical Journal,* March 6, 1926) recalls that the interpretation of the pyelogram depends primarily on understanding that the solid medullary apex of the kidney projects into the outer end of the tube shaped calyx, and that if this tube shaped calyx is distended with fluid such fluid surrounds the solid medullary apex which is projecting into that calyx. If the normal individual calyces are observed they will be seen to have cup shaped outer ends, showing that the sodium iodide has surrounded the normally projecting apex of the solid renal medullary cone.

In pyelonephritis and hydronephrosis there is absorption of the solid apex of the renal pyramids and, consequently, the outer ends of the calyces (instead of being cup shaped as in the normal) are "knobbed". Such rounding is indicative of inflammation and of pyelonephritis with destruction of some portion of the solid renal tissue; an advanced stage of this knobbing is seen in hydronephrosis.

Ptosis of the kidneys is often a part of the picture of general visceroptosis, which can be visualized by a combination of the separate results of pyelography and a barium enema. Kinks and twists in the ureter are common in renal ptosis. Their discovery by pyelography may or may not be of moment; it entirely depends on the presence of cupping or knobbing in the minor calyces. Cupping indicates medical treatment, for there is no back pressure; knobbing means back pressure due to obstruction, and nephropexy may be required to straighten out the ureter and ensure a free onward flow of the urine.

In a congenital cystic kidney there is a general enlargement of the organ, which is shared by the hollow part (pelvis and calyces). The knowledge is used in diagnosing this condition by pyelography. The disease is always bilateral, but one kidney is in a more advanced stage of disease than the other—that is, one is usually larger than the other.

In tuberculosis, the characteristic tendency of tubercle is for it to undergo caseation and distintegration, when the contents are discharged, leaving a cavity. In a disintegrating kidney focus the tuberculosis débris escapes into the nearest

calyx and is voided down the ureter with the urine. Therefore the injected sodium iodide escapes the normal confines of the hollow calyx and "runs amuck" in the solid part of the kidney, producing a blurring in connection with one or more calyces, according to the extent of the tuberculous disintegration.

A hypernephroma usually invades one or other pole of the kidney when it involves at least one main calyx. Depending on the extent of the lesion, the resultant pyelogram may show one or two normal calyces only, while the third main calyx is absent; and the pyelogram has the appearance as if the calyx had been amputated.

Essential (painless) hematuria is occasionally observed. Where the physical signs, apart from the nonpurulent hematuria, are negative, the case may be one of considerable anxiety. Cystoscopy may disclose a normal bladder, also evidence from which kidney the patient is bleeding. Here pyelography helps in the diagnosis. If the urinary tract x ray shadows and pyelogram are normal; if the ureteral catheter end is in the renal pelvis of the affected side and the urine withdrawn contains blood; if the blood pressure is normal; if the urine is free from pus and renal casts; and if the painless hematuria has been of long standing—then the diagnosis of essential hematuria will probably be correct.

A uric acid calculus which may not throw an x ray shadow will sometimes do so after distending the renal pelvis and allowing a part of the opaque solution to drain away; some of the solution may adhere to the calculus and cast a shadow.

Extraureteral shadows can be differentiated by ureterography during pyelography, owing to the presence of some iodide solution in the lumen of the ureter.

The Importance of Pyelography in Urological and Differential Abdominal Diagnosis.—Samuel J. Sinkoe (*Urologic and Cutaneous Review,* March, 1926) states that pyelography is of great practical value in a large number of urological conditions, especially chronic cases, such as stricture of the ureter, pyelitis, pyelonephritis, calculi, kinks and angulations of the ureter, renal tumor, tuberculosis, movable kidneys, bladder pathology, diverticula, prostatic hypertrophy, and tabetic involvement.

Because of the anatomical relationship existing between the urologic and the gastrointestinal tracts, one can easily appreciate the confusion which may arise when the symtoms are referred to the lower right or left abdominal quadrants. Aside from the anatomical relationship which the kidneys and ureters bear to the other important abdominal and pelvic organs, there is a close relationship between their innervation. The nerves which originate from the sympathetic system, are derived from the renal, inferior mesenteric, spermatic, ovarian and hypogastric plexuses. A reciprocal relation has been shown to exist between the innervation of the renal system and the gastrointestinal tract. The renal and spermatic plexuses are directly connected. In addition, connection between the splanchnic nerve and the renal plexus is very distinct onthe left side. Close relationship also exists between the renal and celiac ganglia. As a result of this relationship, one can easily see the problem which confronts one in making an absolute diagnosis, with the signs somewhat misleading, unless one resorts to a urological examination, which should include a pyelogram.

Among other abdominal conditions likely to be confused with lesions of the genitourinary tract, may be mentioned the following: Acute and chronic appendicitis, gastric and duodenal ulcer, cholecystitis, cholelithiasis, etc., postoperative adhesions, abdominal tumors, diseases of the spleen, sigmoid and descending colon, diseases of the liver, inflamed retroperitoneal and mesenteric glands, adhesions from salpingitis, malignancy in the pelvis, tuberculous uterine adnexa, ovarian cyst and pressure upon the ureter by a pregnant uterus. In such conditions as these a complete urological examination is important because of the fact that the genitourinary tract may be entirely at fault, and the referred symptomatology may lead to wrong therapeutic measures. This accounts for original symptoms complained of often recurring following an abdominal operation. For instance, a stricture of the ureter may lead to symptoms that eventually cause unnecessary appendectomies, cholecystectomies, various kidney and pelvic operations, etc. It is also important to remember that in some diseased conditions of abdominal organs, the referred symptomatology may be directed toward the genitourinary tract and other abdominal organs.

Chronic Nephritis.—Malcolm Goodridge (*Medical Clinics of North America,* September, 1925) remarks that since Bright's original classification, the pathological classifications have been legion. Kidneys have been grouped according to their gross and histologic appearance, but, unfortunately, it is difficult to correlate the clinical manifestations of nephritis, on the one hand, and structural changes, on the other. We are not able to predict that a given case of nephritis will furnish at necropsy a kidney with a definite pathological picture, either in terms of its size, its color, or its histology; nor is there any close parallelism between kidney function and kidney structure.

Clinically, one sees two types of renal disease with widespread edema, one with raised blood pressure and one without; and two types of cases with hypertension without generalized edema, one with kidney function more or less impaired and the other with little or no depression of kidney function.

That one should see a case of chronic nephritis with edema and moderate increase in blood pressure at one time, and at some later period should observe this same case free from edema but with marked increase in blood pressure and failing kidney function, in no way changes the value of a simple classification. It is not only possible for one type of chronic nephritis with edema to change to a chronic nephritis with hypertension without edema, and failing kidney function, but it is also possible for a case of hypertension with good kidney function, the benign type of the Volhard and Fahr classification, to terminate in uremia with all the symptoms incident to the terminal stage of the diffuse glomerulonephritis of this classification. This has actually happened in about five per cent of the author's cases.

The variables which occur in the clinical course of chronic nephritis add greatly to the difficulties which surround the proper understanding of the subject, and it must continually be borne in mind that, while pure types of chronic renal disease occur in a large percentage of cases, very puzzling admixtures of types also take place.

It is when one comes to consider prognosis that the importance of recognizing and differentiating clinical types of chronic renal disease is especially emphasized. With very little experience one can predict with some degree of accuracy the immediate and ultimate prospect in a fair number of cases, and one will base his prophecy very largely on a study of kidney function, together with the presence or absence of high blood pressure.

BLOOD AND LYMPH GLANDS

Diagnostic Value of Color of Blood Serum in Pernicious Anemia.—Arthur M. Fishberg (*American Journal of the Medical Sciences,* July, 1926), says that in the active periods of pernicious anemia the blood serum is more highly pigmented than normally, being golden, golden brown, or rarely even dark brown. This is due to an increase in the bilirubin content and to the presence of hematin. In an anemic patient the presence of pale blood serum speaks definitely against the diagnosis of pernicious anemia. Observation of the serum color is of particular value in the differential diagnosis between secondary anemia due to carcinoma and pernicious anemia.

The Reticulated Red Cells: Their Clinical Significance.—William Dameshek (*Boston Medical and Surgical Journal,* April 29, 1926) says that the reticulate count of the red cells is a true index of the amount of bone marrow activity. Before and at the beginning of any remission or permanent rise in red count, the reticulate count surpasses six per cent.; as the culmination of the rise is reached, it gradually falls to normal. With bone marrow aplasia, the reticulate count is extremely low, practically nil. The reticulate count is the best index to bonemarrow activity—better than nucleation of the red cells, polychromatophilia and stippling. There is no better index to prognosis in pernicious anemia than the count of the reticulated cells. Although these are frequently increased, and an elevation up to five per cent. represents probably regeneration going on in the face of greater destruction—a sudden rise in count to above six per cent. presages a coming remission, overbalancing destructive forces. Very grave are the continued low counts that bespeak forthcoming death. The relapse in pernicious anemia is closely related or at least extremely similar to aplastic anemia, which with its evident bonemarrow failure, has an almost absent reticulate count. Platelet

regeneration and aplasia are apparently closely related to red cell growth, for in purpura hemorrhagica the reticulate count goes up before recovery and remains low with impending death from hemorrhages. In the field of diagnosis, the marked reticulosis in congenital hemolytic anemia is a pathognomonic point differentiating that disease from all other anemias with large spleens.

Chloride Metabolism in the Anemias, Especially Pernicious Anemia.—Margaret G. Rioch and A. T. Cameron (*Canadian Medical Association Journal,* March, 1926), adduce evidence that in pernicious anemia not only is there complete gastric achlorhydria, but also that in some, if not all cases the chloride ion is absent from such gastric secretion as may occur. The dependence of the value of whole blood chloride upon the proportion of cells to plasma is emphasized. Determinations of whole blood chlorides are valueless for most clinical purposes. The plasma chloride content is relatively constant and normal in the anemias.

In the active stage of pernicious anemia, especially when the hemolytic changes precede nervous symptoms, there is a slight but undoubted lowering of cell chlorides.

In the remissive stage of pernicious anemia, and in the other anemias studied, the average figure for cell chlorides does not markedly differ from normal, but the extremes show wider variations.

There is in the active stage of pernicious anemia a marked upset in chloride metabolism, characterized by lowering of the blood cell chlorides, and, in some if not all cases, by the absence of the chloride ion (as well as hydrochloric acid) from any gastric secretion that occurs. The former abnormality may disappear in the remission stage. Further work is necessary to determine whether there is definite chloride retention in pernicious anemia.

Chemistry of the Blood.—V. C. Pedersen and M. Exiner (*International Journal of Medicine and Surgery,* 38:11) from the findings of numerous questionnaires sent out to urologists in the United States and Canada, conclude:

Biochemists and chemists have carried to the final degree of development the forms and the technic of tests available for determining the constituents of the blood with the least expense in time, energy, material and cost. Their work might be called the purely laboratory and technical side of the matter.

Urologists are not yet in unanimity as to what shall constitute the primary or basal tests and what the final or supplementary tests. Likewise there is a certain amount of divergence of opinion as to what substances shall be examined for in the incidental or casual patient possibly of the urological type and the special patient definitely of the urinary lesion group. From the foregoing statistics there is relative uniformity in perhaps two thirds of the urological world. It remains, therefore, for the remaining third to so revise their procedures that everyone will understand substantially what is meant by the general term "blood chemistry" as it appears in a record.

From careful reading of the statistics given as to the attitude of the general practicioner and of the general surgeon, it is clear that the application of blood chemistry to their field is still in the creative period. Of course the sooner the general profession adopts the teachings of so important a branch as urology in a matter so indisputable as blood chemistry, the greater will be the service to humanity of the medical profession as a whole and of each special branch.

The Chylomicron (Free Fat) Content of the Blood in Infants.—Louis C. Schroeder and Evelyn Holt (*American Journal of Diseases of Children,* February, 1926) summarize their investigations of the chylomicron content of infants' blood. The study shows that the content is increased in proportion to the fat content of the food. Greater variations in the digestion and absorption of fat seem to take place in infants than in adults. The addition of cod-liver oil usually increases the chylomicron content of the blood, but in one case of rickets such an increase was not found. Oleomargarine caused no marked increase in infants under four months old, nor did ether anesthesia cause a rise. Butter, as added in the butter-meal mixtures, is rapidly digested and absorbed, and these mixtures give the highest chylomicron content in the series studied.

Calcium Content of the Blood in Gout and Arthritis.—Philip Horowitz (*American Journal of the Medical Sciences,* April, 1926), finds that the knowledge of the blood calcium, except in acute gout, whether during the attack or in the interval, is of no help in distinguishing gout from arthritis.

Relation of the Gastrointestinal Tract to Pernicious Anemia.— A. C. Ivy (*Northwest Medicine,* August, 1926) presents evidence which strongly suggests a causal relationship between the gastrointestinal tract and pernicious anaemia, and is sufficient to definitely indicate the administration of hydrochloric acid with and after meals to patients who have a persistent achlorhydria.

GASTROENTEROLOGY

"Surgically Incurable" Gastric Ulcer.—Hans Finsterer (*Wiener klinische Wochenschrift,* March 11, 1926) states that it is generaly well known that gastric ulcer varies in its curability in different individuals, which fact is the basis for the necessity of surgical treatment, as all the operated cases belong to the group of ulcers that are healed with difficulty. The author proposes a classification of gastric and duodenal ulcers according to the grade of their curability:

1. The gastric ulcers that are "curable with internal treatment" include those cases which heal with careful internal treatment.

2. The ulcer that "heals with difficulty with internal treatment" includes those cases which do not heal in spite of repeated internal treatment, and must therefore be treated surgically.

3. The ulcer that "heals with difficulty with surgical treatment" includes those cases which always recur after repeated operations, but which are eventually permanently healed by the avoidance of certain technical errors (especially the Y shaped anastomosis) or by the removal of very large portions of the stomach even after several futile operations. The number of these very rarely recurring peptic ulcers of the jejunum may be considerably diminished if at the time of the first operation a sufficiently extensive resection is done, if, particularly, a sufficient amount of the stomach is extirpated at the radical resection of the peptic ulcer of the jejunum and the Y shaped anastomosis is avoided.

The term "surgically incurable" ulcer should not be used until it has been definitely shown by repeated observations that the truly extensive resection of the stomach was not able to avoid a recurrence, which, as a matter of fact, has not been shown in a single case.

Gallbladder Disease.—J. E. Cannaday (*International Journal of Medicine and Surgery,* 39:2) states that whether to drain or not to drain following cholecystectomy is still a debated point. The number of surgeons, however, who treat the gallbladder on the same general basis as the appendix is increasing. His experience and that of some of his associates covering over three hundred cases, in which the gallbladder has been removed and the incision closed without drainage, have convinced us very thoroughly that it is not necessary to institute drainage after the average cholecystectomy. In some cases, the author has even dispensed with drainage following the removal of an unruptured pus gallbladder. The cystic duct was divided with the cautery and there were not at any time indications of intraperitoneal infection subsequent to the operation.

Many surgeons have argued that inasmuch as bile showed itself in nearly all of the cases in which drainage was used, they leaked and therefore should be drained. In my opinion, the presence of the drain causing foreign body irritation and chemotaxis is responsible for the leakage. Relative to the dangers of leakage after cholecystectomy and the closure of the operation wound without drainage, a slight leakage of bile does not necessarily mean disaster.

Peritonization after cholecystectomy is most important, and while in many cases the parietal peritoneum can be sutured over the raw liver surface, there are cases in which it may be necessary to make use of a portion of the omentum for this purpose. In certain cases of obstruction of the common duct, as an emergency measure at least, it may be expedient to drain the gallbladder into the pyloric end of the stomach or into the duodenum or jejunum. The results are usually quite satisfactory. Again occasionally, it is feasible to anastomose a chronic discharging biliary sinus into the stomach.

There are certain cases in which the surgeon is often in a quandary as to what is the best thing to do. The patient has typical gallbladder symptoms and undergoes operation; nothing is found but a tightly distended gallbladder with a number of apparently old adhesions over its fundus and sides. The author thinks cholecystectomy is advisable in such cases and often gives the desired relief. It is an unfortunate fact that surgical attacks for gallbladder disease do not always bring about a cure.

Hepatitis is present in practically all cases of gallbladder disease in varying degrees. It may be the prelude of liver or portal cirrhosis.

Hepatic insufficiency is the occasional cause of death following gallbladder operations. The patient, twenty-four hours postoperative, develops circulatory failure, has a cold clammy looking skin. Treat with intravenous glucose every four to six hours and give tap water by rectum.

The Classification of the Diarrheas with an Outline of Treatment.—R. D. Rudolf (*Canadan Medical Association Journal,* May, 1926), presents this summary of his address:

Diarrheas may be anatomically classed as high, middle or lower, depending upon the portion of the tract that is at fault. Etiologically considered diarrheas may be classed as nervous, purgative or organic. The treatment of the nervous type consists chiefly of psychic therapy, with the use of nerve sedatives; the treatment of the purgative type of medicinal purgatives to get rid of the irritating contents of the bowel that are the cause of the trouble. The medicinal treatment of the organic forms is likely to be more difficult and consists in the use of protectives and astringents and often of opium in some form. When the condition is in the lowest portion of the tract much of the therapy is best conducted from below. The treatment of mucous colitis is chiefly that of the general nervous condition although local therapy has its place.

Carcinoma of the Stomach with High Blood Eosinophilia.—Emil Weiss (*Journal of Laboratory and Clinical Medicine,* May, 1926) reports a case which is of interest because of the fact that it is the first reported case of carcinoma primary in the stomach with high eosinophilia; there was opportunity to follow the case for a reasonably long time; and experimental work was done in connection with this case. On three different occasions the eosinophiles were 24.2, 25.7 and 31.8 per cent. There have been reports of only six cases of carcinoma with such high eosinophilia. In the author's case no eosinophilia was found in the tumor or surrounding tissue. There was a decrease of eosinophiles after the removal of the tumor, similar to the observations of Vosswinkel and Baradulin, but in a few weeks after the operation there was a rise in the eosinophiles exceeding that before operation; whether this postoperative eosinophilia was caused through metastatic growth of the tumor could not be determined. Neither the tumor extract nor the blood of the patient could produce eosinophilia in guinea pigs, rabbits or dogs. This experimental work does not confirm the assumptions of Kappis, who thinks that the eosinophiles in the blood and in the tissues were caused by the toxins, derived from necrotic tumor tissues. Not the slightest phagocytic properties of the eosinophiles, even in the presence of immune serum, could be detected.

Technic of Appendectomy.—C. R. Robins (*Virginia Medical Monthly,* Februarv. 1926) describes a maneuver which minimizes trauma in removal of the appendix. Trauma increases toxic absorption and by so much reduces the chances of recovery. A McBurney incision is usually made, over the point where the base of the appendix is believed to be. By the use of retractors the base can, as a rule, be exposed. Even if it does not appear immediately it can usually be brought into view by moving the cecum about with a sponge on a stick; upon then describing a quarter circle with the handle of the forceps the appendix is readily delivered out of the wound, provided there are no adhesions. If adhesions exist, they are best separated by working from the base. Usually the maneuver succeeds, but sometimes it is necessary to help the delivery of the appendix, preferably with the small French intestinal forceps, which do not traumatize. The maneuver does away with searching for the appendix with the finger; this sometimes causes considerable trauma, and often fluid is squeezed out of the appendix or a necrotic appendix ruptured. At the base the organ is most likely to be normal or nearly normal, so that a firm hold is secured and the organ may be manipulated without fear of rupture or breaking. The clamp at the base effectually stops further absorption along that channel. The time of operation is shortened, and as evidence of the lack of trauma, post-operative pain and nausea were observed to be greatly diminished.

The Surgical Indications of Inflammatory Diseases of the Gallbladder.—Aime Paul Heineck (*Western Medical Times,* June, 1926) says that cholecystectomy is the indicated operation if the patient's general condition permits:

1. In all localized or diffuse ultraacute inflammatory conditions: Ulcerative, gangrenous, phlegmonous or membranous cholecystitis. In all cases of cholecystitis in which the gallbladder is so altered that judged by gross evidence, "it can not come back."
2. In acute cholecystitis when the gallbladder is very distended from blockage of the cystic duct.
3. In advanced chronic or repeated inflammations of the gallbladder. When the organ is markedly thickened, contracted, atrophied, deformed, shrunken or adherent and when it is evident that it can not be restored to its normal condition, when it is evident that it is irretrievably lost or that the disease is progressive in nature as in fibrous or calcareous degeneration. In these cases, the elasticity of the gallbladder wall is impaired or lost and its glandular secreting apparatus partly or wholly destroyed.
4. In a socalled strawberry gallbladder, the gallblader mucosa being covered with tiny beads.
5. In hydrops fellæ due to blockage of the systic duct, secondary to stricture or to impacted stone.
6. In empyema of the gallbladder due to an impacted stone or strictured cystic duct.
7. For the cure of pathological fistulæ existing between the gallbladder and a hollow viscus, if associated with disturbances, calling for treatment.
8. For penetrating injuries, ruptures and perforations of the gallbladder of either traumatic, calculous or inflammatory origin.
9. For mucous fistulæ of the gallbladder resulting from stricture or other obstruction of the cystic duct.
10. In chronic obstruction of the cystic duct whether due to stone impaction, scar tissue formation or torsion of the gallbladder.
11. In irreparable injuries of the gallbladder.
12. In volvulus of the gallbladder.
13. In benign neoplasms of the gallbladder.
14. In operable malignant neoplasms of the gallbladder.

New Facts Concerning Fat Soluble Vitamines.—Past studies have shown that at least two substances of the fat-soluble vitamine type occur in codliver oil, vitamine A and vitamine D, the former being applied to substance more particularly affecting growth, and the latter referring to the factor playing a part in the deposition of lime in bones. Recently the existence of a third vitamine of the fat soluble class, which plays an extremely important part on reproduction has been proved. This factor, J. C. Drummond (*Lancet,* February 6, 1926) believes to be distinct from either vitamine A or D; it is called vitamine E.

The majority of natural oils and fats, such as codliver oil, consist of about ninety-nine per cent. true fats (glycerides) and some one per cent. substances which resist the action of potash when fats are broken down into glycerol and soap in the ordinary saponification process. This one per cent. is termed the unsaponifiable matter. If this is prepared with care so as to prevent secondary changes, in particular oxidation, it has been found to contain the whole of the vitamines present in the original oil.

The unsaponifiable matter prepared from codliver oil has been submitted to chemical fractionation as follows: Precipitation with digitonin gives rise to cholesterol (inactive) and an active material; when the latter is distilled, there result three inactive substances of varying melting points and an active vitamine fraction together with traces of spinacene. The separation of vitamine A, however, in what can be considered to be the pure condition has not been possible as yet. If an amount of the active fraction weighing only 1/200 mg. be added to a deficient diet, experimental animals have been found to live, maintain health and show a normal rate of growth.

This very highly active fraction consists largely of unsaturated higher alchohols, containing in their molecules only the elements carbon, hydrogen, and oxygen. It is agreed that we must abandon all ideas of the vitamine A

being a labile, ill defined compound, as we at one time imagined, when it is so readily demonstrated that it can survive such a drastic chemical treatment as saponification with boiling alkalies and distillation at temperatures over 200° C.

It has been found that rickets can be cured equally well by exposing the patient to ultraviolet light or by administering a substance such as codliver oil, but the reason for this is still unknown. It was also discovered that a food mixture which, by reason of its deficiency will give rise to rickets in animals, becomes endowed with antirachitic potency after it has been exposed to ultraviolet light. Two possibilities suggested themselves to account for this. On the one hand, it was possible that the treated fats absorbed ultraviolet rays, and that the energy so absorbed was later emitted in the form of secondary radiations, which acted similarly to the direct exposure to the primary radiations. On the other hand, the more attractive hypothesis was that possibly the absorption of the short wave length radiation actually produced in the foodstuffs a substance of the type of antirachitic vitamine D. The precursor of the physiologically active substance was found to be present in the oils or fats. The examination of such activated fats revealed that the conference of antirachitic potency could be traced to the action of ultraviolet light on a constituent or constituents of the unsaponifiable fraction. One of the most commonly occurring substances in these unsaponifiable oils and fats is cholesterol, which is almost universally distributed in living cells.

Cholesterol, or the very closely related compound, phytosterol, is the parent substance of the antirachitic vitamine. If cholesterol is exposed to ultraviolet light under suitable conditions, a product showing an extremely powerful antirachitic action is obtained. This activated cholesterol shows little or no effect on growth nor any other properties of vitamine A, so that it may be definitely accepted that these two substances A and D are distinct.

Carbohydrates in Nondiabetic Acidosis.—A. H. Hoge (*Virginia Medical Monthly,* February, 1926) alludes to nine cases of severe postoperative acidosis—the kind that usually vomit until they die—in eight of which the vomiting was entirely controlled in from twelve to thirty-six hours by the use of glucose and insulin. The ninth case received partial benefit. Three cases of severe toxemia of pregnancy, referred to a hospital by family physicians for interruption of pregnancy, were daily given enemas of sodium bicarbonate, four ounces of a twenty per cent. solution of glucose by rectum every three hours, and five per cent. glucose and insulin intravenously. In each case the vomiting was controlled within forty-eight hours, after which the patients were put on an almost absolute carbohydrate diet, especially fruits and the glucose and insulin continued for one week. The reason for combining insulin with the glucose is that some individuals are otherwise unable to utilize the glucose alone; insulin combined with glucose clears up an acidosis due to ketosis more rapidly than does glucose alone. As for dosage, it is safe to use one unit of insulin to every three grains of glucose. To one thousand mils of five per cent. glucose solution, containing fifty grams of glucose, one can safely add twenty units of insulin and have no fear of shock. Satisfactory results from this form of treatment are obtained only in the type of acidosis due to disturbance of carbohydrate-fat metabolism with the production of ketosis. It cannot influence acidosis of renal origin, due to failure of the kidneys to eliminate acid phosphate. Acidosis in the diarrhea of infancy is partly due to this functional renal incapacity, and while glucose and insulin should be used in such cases they are useless unless a large amount of fluid is also given.

Surgery of Gastric and Duodenal Ulcers.—G. de Takats (*Annals of Surgery,* 83:2) claims several advantages for gastrectomy in the treatment of gastric operations for ulcer and carcinoma, basing his claims on the material of the first surgical clinic of the University of Budapest, from the year 1914 to 1924. During this time both anastomoses and resections were performed, the percentage mortality showing that the latter is by no means a greater risk for the patient than the former. Also in favor of radical procedures was the fact that in examining histologically the resected gastric ulcers, twenty-five per cent. were found to have atypical proliferations on the margin of typical callous ulcers. Macroscopically no expert pathologist can detect a beginning carcinoma developing on the basis of an ulcer.

The operations showed an ever lessening mortality, until the last eighty-eight cases of resection operations gave only a 3.3 per cent. mortality. This the author attributes to three main factors; first, to the use of local anesthesia, plus splanchnic anesthesia when the abdomen has been opened; second, to the use of an intestinal sewing machine, whereby both duodenal and gastric stumps are sewed with powerful crushing clamps that bury new silver clips in four rows and perform an aseptic and watertight closure in two to three minutes; and third, to the constantly growing experience of the staff in this type of operation—the tendency in this country and elsewhere to look down upon technic as something of secondary importance is misleading. A good theoretical basis is extremely important for the surgeon.

The author concludes that while medical treatment aims at rest and neutralization, gastric resection achieves the same. It surely relieves all spasms and lowers the acidity considerably. It has been called mutilating and destructive, but in reality it only creates simpler conditions, while gastrojejunostomy, though surgically a smaller interference upsets the normal function of the stomach.

TUBERCULOSIS

Tuberculosis Immunization.—Nathan Raw (*British Medical Journal,* March 27, 1926) has conducted some experiments on animals which show that it is only possible to protect animals against tuberculosis by using bacilli of human origin against an infecting dose of bovine origin, and vice versa.

The problem of tuberculosis resolves itself into the question of immunity. Contrary to what is observed in other infectious diseases, no immunity is conferred on the human by a previous attack of tuberculosis, which is caused by the same type of bacilli. Pulmonary tuberculosis, which is nearly always caused by bacilli of the human type, does not appear to give immunity in after life, and patients whose disease has been arrested are liable after many years to another acute attack of active tuberculosis. Clinical experience, however, shows that children and young adults who have received a mild infection of bovine bacilli in milk, causing enlarged glands of the neck, bone and joint lesions, and other forms of localized tuberculosis, are practically immune to pulmonary tuberculosis, and it was this observation that led the author to use bovine bacilli to immunize animals and man against the more serious disease of the lungs.

It seems to be probable that children may be protected against infection in the household, but some years must elapse before this can be finally established. All children over the age of one year who are living in the same house with a tuberculous member of the family ought to be protected if possible against infection, and it is in the early years of life that such infection usually occurs. From a long observation of tuberculosis the author is convinced that if some active immunity can with complete safety be given to those children who are directly exposed to infection at home, a long step will have been taken in the direction of prevention. The protection of the community by some scientific method of active immunization is the only effective way to prevent this scourge.

Tuberculosis of Ileocecal Glands.—L. R. Braithwaite (*British Journal of Surgery,* 13:51) offers several suggestions regarding intraabdominal tuberculous conditions:

Those cases in young children where an operation for acute appendicitis shows the source of the trouble to be an acute and possibly a nontuberculous adenitis, and not an obvious appendicitis, are treated by appendicectomy alone. Where a mass of caseous or calcified glands is found, removal of the appendix and closure of the abdomen are indicated, with general treatment to follow. In young children where one or two glands only are seen to be the seat of caseation or calcification, one may consider removal of the diseased glands and of the appendix. One rule should be always borne in mind, i.e., never attempt removal of a diseased gland if it lies close to the mesenteric border of small or large intestine—a fecal fistula may be the result. It would appear to be a dangerous thing to interfere in the way of either curettage of a gland or enucleation of it in the presence of an acute infection as indicated by a high temperature, though the presence of a localized peritonitis

as indicated by a reddening of the overlying peritoneum should be no bar to its extirpation in the absence of severe general symptoms.

Removal of the affected gland or glands is easy so long as the gland is completely calcified or caseated, and so long as calcification has not produced rocky masses which, jutting out, entangle mesenteric bloodvessels. In the latter case enucleation may be very difficult. In a simple case, the left forefinger supporting the gland from behind, an incision is made at right angles to the line of the intestine through the peritoneum overlying the gland, by means of a dissector; the peritoneum is lifted from the front, and, in the case of the small intestine mesentery. from the back of the gland. After removal of the gland and careful ligation of every bleeding point, the peritoneum is closed by a row of Lembert sutures.

It sometimes happens that there is such a mass of inflammatory tissue in and around the capsule of the gland that excision cannot be done without a wide excision of mesentery, endangering the blood supply of the bowel. In these cases one of two things may be done: 1, Opening and curettage of the gland, with careful hemostasis and closure; 2, sequestration of the gland by an omental flap or, better, an omental graft. It should always be borne in mind that the symptoms in the adult variety are due to a localized and probably only a traumatic peritonitis, and therefore a barrier of tissue between the mobile intestines and the irritating focus is all that is necessary.

Whatever local treatment is adopted, it should be followed by heliotherapy.

Tubercle Bacilli in Feces.—That many patients swallow a large proportion of their sputum has long been recognized. This is especially true of women and children, but, owing to the frequent difficulty of diagnosis in children, the importance of obtaining definite evidence of tuberculosis, either by examination of the sputum if it can be obtained, or by other methods, if it cannot, is obvious, and hence any method which will help to this end is of value. The results which have been obtained by examination of the feces of 225 tuberculous children for tubercle bacilli are such as to show that this method is of importance, and should be more widely known and practiced.

All cases admitted to the service of Kathleen A. H. Sykes (*Lancet,* February 6, 1926) either for observation for suspected pulmonary tuberculosis, or with a diagnosis definitely implicating the lung, had their feces examined for tubercle bacilli as a routine. In addition, and as controls, a number of cases of tuberculous peritonitis, cervical adenitis, and children not suffering from tuberculous disease were also investigated. Direct smears from the surface of constipated stools were found unreliable when tubercle are scanty. The antiformin method, though reliable, is protracted. The ligroin method was found reliable and convenient, and is recommended. The technic is the following: A piece of feces the size of a walnut is ground up in a mortar with sufficient saturated solution of sodium chloride to produce an emulsion of the consistency of cream. To this emulsion two c.c. of a mixture of one part of ligroin and two parts of acetic ether are added and the whole intimately mixed, then filtered through three layers of sterile gauze into a clean test tube and allowed to stand for twenty minutes. With a sterile pipette a few drops of the layer immediately beneath the ligroin acetic ether layer are withdrawn, expressed on to a slide, spread and fixed by heat.

Evidence is submitted to show that there is little doubt that the acid fast bacilli found in the feces of children suffering from pulmonary tuberculosis are tubercle bacilli. Nonpathogenic acid fast and alcohol fast bacilli are not found in human feces, and tubercle bacilli are not found in the feces of healthy individuals. Tubercle bacilli, if present in the sputum, can be demonstrated in the feces in 100 per cent. of cases. In no case in which the sputum on repeated examination was negative for tubercle bacilli were these bacilli found in the feces. In children suffering from pulmonary tuberculosis tubercle bacilli can frequently be found in the feces when no sputum can be obtained for examination. The presence of tubercle bacilli in the feces is not necessarily evidence of an intestinal lesion. In children, who so frequently swallow their sputum, the examination of the feces for tubercle bacilli can be more generally applied than the sputum examination, and yields a higher percentage of positive results. It is in consequence of definite value in diagnosis and prognosis.

Studies on Nutrition in Tuberculosis.—In a study of experimental tuberculous infection in the albino rat and the influence of vitamine deficient diets thereon, Maurice I. Smith, and E. G. Hendrick (*The Journal of Laboratory and Clinical Medicine,* May, 1926) chose the rat in an attempt to break down the natural resistance of this animal to tubercle infection by depriving it of some of the dietary accessories which are known to be so vital in its nutrition and metabolism. A virulent human strain of tubercle bacilli, H37 was used to produce the tuberculous infection. The albino rat so infected can be rendered susceptible to tuberculin shock by withholding fat soluble vitamine A from its diet. The experiments described indicate that the tubercle infected rat deteriorates more rapidly than the noninfected control when maintained on a diet of low biological value and low in fat soluble vitamine A. Liberal allowance of fat soluble A appears to afford protection against the early deterioration. It is not certain whether this indicates an increased demand for vitamine A. The increased susceptibility to tuberculin shock of the infected vitamine A deficient rat appears to offer evidence in favor of the former view.

Retroperitoneal Tuberculosis Lymphadenitis.—I. S. Radvin (*Annals of Surgery,* 83:6) describes two cases, in both of which the patients did well under good hygiene and x ray treatment. In his opinion, it is likely that in the early stages good hygiene alone will cause subsidence and cure. In all cases it is important to increase the normal vital resisting forces of the body. Removal of the nodes in those cases where this is feasible should be done, but it is unwise to subject the patient to the risk entailed when the blood supply to the viscera is liable to be compromised.

It is important to do a biopsy in any case where doubt exists since the x ray treatment for retroperitoneal sarcoma is different from that of retroperitoneal tuberculosis. In the first instance the dosage is intensive, while in the latter it is mild, and intensive x ray treatment in the cases of retroperitoneal tuberculosis will not give favorable results.

Primary Tuberculosis of Gallbladder.—F. W. Rankin and F. M. Massie (*Annals of Surgery,* 83:6) report on a small series of cases of which they say:

The treatment of tuberculosis of the gallbladder must of necessity be decided by the case. Acute miliary tuberculosis need not be considered. In conditions secondary to far advanced active tuberculosis elsewhere, the surgical treatment of the gallbladder should be palliative. In those cases where local and general conditions permit, we feel that a cholecystectomy should be done, but in saying this we are not unmindful of the figures in this short series, including our own case; namely, that of four cholecystostomies, there were four recoveries, two without fistula, while of four cholecystectomies done there were but two recoveries.

Surgery on the Tuberculous Patient.—F. W. Griffith (*Surgery, Gynecology and Obstetrics,* 42:6) states that local anesthesia should be used whenever possible. Ether does practically no more harm to the tuberculous than to the nontuberculous lung and a general anesthesia with ether should be employed whenever the necessity arises. Ethylene bids fair to replace ether in these cases.

Pulmonary tuberculosis is not a strong contraindication to surgery. On the contrary, many patients are greatly benefited by the surgical removal of conditions which are indirectly retarding their recovery.

Whenever a tuberculous patient becomes pregnant intervention should be considered. If it is deemed wise to allow the pregnancy to go to full term, well and good; if, however, it is reasonably certain that intervention will have to be done it should be done early before irreparable damage has been done to the lungs.

Tuberculosis of Mesenteric Lymph Glands.—J. R. Head (*Annals of Surgery,* 83:5) reports a case of rupture of a caseocalcareous tuberculous gland of the mesentery and surveys the literature, summarizing his deductions as follows:

In Floderus's series two thirds of the cases occurred between the fifth and tenth years. It may occur in infants and is not uncommon in youths and adults. The serious complications, especially ileus and perforation, are more likely to occur in the older patients. The mode of infection is ingestion and the route is through the intestinal mucous membrane to the glands that drain it. In a majority of cases the bacilli are of the bovine type. The pathology is that of tuberculosis in glands in other locations. In general there

are two types—the diffuse and the localized. Many of the symptoms and complications are secondary to periadenitis and adhesions or to chronic or acute perforation of purulent or caseous glands. These may be secondarily infected.

While certain syndromes are more common than others, the disease is characterized by the diversity of its clinical manifestations. There may be no symptoms, the picture may be one of chronic abdominal pain, with or without acute exacerbations. The first symptoms may be acute, due either to an exacerbation of a latent process or to one of the complications.

The physical findings are as follows: There may be poor nourishment and development, but as often as not the patients are in good physical condition. There may be another tuberculous focus in this body. In most instances there is an abdominal tumor. This may be located in any part of the abdomen. In a majority it is in the right lower quadrant. During the acute exacerbations there is a tenderness and spasm. The stools may be foul, copious, shiny and rich in fat.

Ileus, abscess formation, chronic or acute perforation, and pressure upon the duodenum, the common bile duct, the ureter, or the portal vein, and miliary tuberculosis are the chief serious complications. The diagnosis is difficult and is rarely made prior to operation. The condition most often simulated is chronic or acute appendicitis, but the symptoms may suggest almost any abdominal condition. The x ray will show calcification if present and in children a positive von Pirquet reaction is of value.

The treatment is medical and surgical. The former is the same as for surgical tuberculosis in the other regions. The operative procedure indicated will be determined by the stage of process. Extirpation of glands where possible. Extirpation of glands and resection of the bowel where injury to the mesenteric arteries is unavoidable or where there is gangrene. Drainages of abscesses. Opening and curettage of caseocalcareous masses with subsequent packing or infolding suture.

Phrenic Evulsion as an Aid in the Treatment of Pulmonary Tuberculosis and Bronchiectasis.—H. Morriston Davies (*British Medical Journal,* February 20, 1926) states that when the phrenic nerve is paralyzed by severance of the nerve supply, there is a two fold effect: the diaphragm cannot pull on the lung and expand the lower lobe and it produces a partial collapse of the base of the lung. As a result, benefit is derived from the diminution in the outpouring of toxins into the lymph stream.

The indications for phrenic evulsion are the following: 1, As a means of arresting disease in cases of basal tuberculosis and bronchiectasis; 2, in association with local thoracoplasty it is applicable in the conditions described above in which the disease is quite extensive; 3, to assist in controlling the disease in more generally extensive or more advanced or more acute cases of pulmonary tuberculosis; 4, as an accessory to artificial pneumothorax treatment; 5, for the treatment of symptoms; 6, as a preliminary to thoracoplasty: a, as a test of the ability of the sounder lung to stand up to increased work which will be imposed on it by the major operation; b, as an aid in improving the general condition of the patient, and c, to prevent the development of catarrhal signs in the lower lobe; 7, as a preliminary to radical treatment of a tuberculous empyema; 8, after imperfect resolution of pneumonia, and 9, in order to free the heart from embarrassment.

The technic is as follows: The operation is done under local analgesia. Novocaine, one per cent., is used with adrenaline hydrochloride; twelve c.c. should be sufficient to anesthetize completely the field of operation. An injection of omnopon, one third grain, or morphine, one fourth grain, is also given. The skin incision is either oblique along the lateral border of the sternomastoid muscle, five cm. long, the centre being five or six cm. above the clavicle; or transverse, five to six cm. above the clavicle, two thirds being lateral and one third mesial to the lateral border of the sternomastoid muscle. The skin, platysma, and fascia are divided and the lateral border of the sternomastoid is defined and exposed, and is then retracted mesially. The next landmark is the omohyoid muscle crossing the wound downwards and laterally. This is retracted downwards. The scalenus anticus muscle with the phrenic nerve crossing it is still concealed from view by fat, glands, and the deep cervical fascia. The dissection must be carried down through these and the muscle exposed. If the nerve is running a normal course it will now be seen crossing obliquely from above downwards and mesially across the surface of the muscle. Care must be taken not to displace the nerve to one side with the fascia. During the deeper dissection the internal jugular vein will be seen on the mesial aspect of the wound, and must be drawn to one side. The superficial cervical and supraclavicular vessels can be seen running across the lower end of the wound.

The course of the phrenic nerve is not constant; it may not come on to the anterior surface of the scalenus anticus till low down in the neck; it may cross to the mesial margin high up; at times it may run through the substance of the muscle. When the nerve is pinched with a forceps the commonest sensation is one of pain referred to the shoulder or to the upper part of the arm. Sometimes a fluttering sensation is felt in the region of the costal margin, or a definite sharp contraction of the dome of the diaphragm can be both seen and felt.

The nerve is divided at the highest exposed point, and the cut peripheral end is seized in a forceps. Traction is now applied, and as each successive length of nerve appears a Spencer Wells forceps is applied to it, so as to retain a hold on the nerve should it rupture immediately below the upper forceps through which the traction force is exerted. When some 10 cm. of the nerve has been slowly drawn out from the wound, an extra pull will probably rupture the filaments from the diaphragm and the whole nerve comes away. At the moment when the break occurs the patient usually experiences a sudden jerk at the base of the chest. The operation is now concluded by stitching together the divided deep facsia, the superficial fascia and the platysma, and the skin.

Sanocrysin in Pulmonary Tuberculosis.—R. Staehelin (*Schweizerische Medizinishe Wochenschrift,* March 3, 1926), reports that experiments with sanocrysin (sodium gold thiosulphate) showed that *in vitro* this substance inhibits the development of tubercle bacilli in a concentration of 1 to 100,000 and with a concentration of 1 to 1,000,000 there is marked inhibition; it makes the entrance of metallic ions into the bacilli possible by destroying their lipoid membrane, and in doses that are nontoxic for normal animals it kills tuberculous animals under the picture of a tuberculin shock. The conclusion was therefore drawn that it destroys the tubercle bacilli in the living organism, at the same time liberating the toxins and producing a shock in hypersensitive animals. If the resulting toxins could be neutralized, a *sterilisatio magna* ought to be possible. Experimentally this has been shown to be possible.

Just as with tuberculin, there is a focal and general reaction. The focal reactions take the form of severe dyspnea and cyanosis and râles. The general reaction appears as fever appearing two to three hours after the injection, returning to subnormal the next morning. Here there is serious danger of a fatal collapse and only intravenous injections of serum may save the patient. Subsequent injections do not result in fever or only a slight fever appears. The rise in temperature may be only slight or entirely absent. Another cause of death is often a cachexia. Marked losses in weight are quite common, but the patient feels unusually well with all that. On cessation of the treatment the loss in weight is rapidly recovered. In a few cases the loss in weight may be associated with a marked loss of strength and the patient may die from exhaustion. There may also be albuminuria, sometimes quite severe and of long duration, but never as the result of a severe renal injury. Toxic exanthemata also appear and should be considered as a warning signal, but these do not recur if no injection is again given until the rash disappears entirely. Vomiting, occurring immediately after an injection is harmless. Singultus is also a warning signal, but usually disappears rapidly. Diarrheas, occasionally occurring pains in the chest or slight dyspnea, the increase of a pleuritic exudate or increased abdominal pains with peritonitis, and, perhaps, certain ocular symptoms should be considered as focal reactions. They are all insignificant as compared with shock, febrile intoxication and cachexia.

The cases studied show that the results with sanocrysin are such as have never been observed heretofore. With a careful technic, the dangers are not really serious. Certain conditions, however, must be fulfilled, namely, careful temperature measurements so that the injections should not be given at too rapid a succession and thus in time treat a sudden fall of temperature with injections of serum and stimu-

lants. The urine should be examined regularly for albumin, especially immediately after an injection. The patient should be kept in bed during the entire course of treatment.

The doses are as follows: In afebrile or subfebrile cases, begin with 0.5 c.c., followed after three days by 0.75 or 1.0 c.c., then 1.0 c.c. every week (in small women only 0.75 c.c.). With a rise in temperature, albuminuria, or other complications, the next injection should not be given until the symptoms have disappeared. In febrile cases no more than 0.5 c.c. should be given; in acute febrile cases begin with 0.01 to 0.025 c.c. Smaller doses should be avoided as the remedy apparently possesses only a slight therapeutic breadth, which does not lie between a highly dangerous and a low ineffective zone, which may also be dangerous. In collapse, give intravenous injections of antituberculosis serum (necessary only with this emergency, otherwise not) and stimulants. Sanocrysin should not be given simultaneously with arsenic. After seven to nine injections the treatment should be temporarily stopped and may be repeated after several months.

Treatment of Phthisis with Sanocrysin.—Knud Faber (*Lancet,* July 11, 1925), formulates the following preliminary conclusions about the sanocrysin treatment from our present knowledge:

1. Sanocrysin has a specific curative action on tuberculosis of the lungs.
2. It does not seem to have the same effect on extrathoracic localized tuberculosis (surgical tuberculosis, meningitis, etc.).
3. It is very effective on fresh tuberculosis of the lungs that has been manifest less than one year.
4. In older cases the effect of the treatment is uncertain.
5. It is difficult to use it in febrile cases, but some good results may be obtained in old cases of apyretic fibrous phthisis. So far it has not been able to cure acute lobar tuberculous pneumonia.
6. In ordinary cases a treatment lasts three to four months.
7. Generally the dangers may be avoided when the treatment is carried out in the right manner and with caution.
8. The antitoxic serum has a curative effect on acute shock. Its effect in preventing albuminuria is not clear, and further investigations are necessary.

Treatment of Pulmonary Tuberculosis with Sanocrysin.—The favorable results reported with the use of sanocrysin and its complementary antituberculin serum in experimental tuberculosis in cattle have urged T. R. Elliott (*Lancet,* January 16, 1926) to try them in the human being.

Sanocrysin is a very soluble thiosulphate of sodium and gold, containing forty per cent. by weight of the latter metal. It is given intravenously as a solution in ten c.c. of water, and care is needed to prevent the needle from leaving an indelible black spot in the skin. For the first few days after an injection gold can be detected in the urine easily, and to a less amount in the feces. It has been found that only thirty per cent. is so excreted; the rest stayed indefinitely in the body. The gold tends to accumulate in the kidneys.

The obvious clinical results of administering the drug, in a dose of 0.5 gm. followed three or four days later by 1.0 gm. are as follows: There is generally a little nausea, and the patient may vomit once or twice in the first few hours. Some complain of a persistent metallic taste in the mouth with dislike for food. There may be a slight headache. That is all, except in patients with active and well-vascularized tuberculous infections. In these the temperature rises; there is often an intense and widespread rash, scarlatiniform or morbilliform; there may be albuminuria with renal casts, but never any edema or serious diminution of urine. The general reaction is not one of severe discomfort. But if the drug is pushed unduly there may suddenly develop alarming features, either of hyperpyrexia or of socalled shock with fall of temperature, a rapid and weak pulse, hurried breathing, and general collapse. Also, excessive doses may lead to intense albuminuria, to persistent vomiting or diarrhea, with complete distaste for food and rapid loss of weight. Most of these features have been ascribed to the liberation of tubercle toxins from bacilli killed by the sanocrysin, and to combat them a special antituberculin serum was prepared. But whichever be the cause, whether the tubercle toxins or the ill effects on the tissues of an excessive concentration of the gold salt, there is very real danger in an ill regulated use of sanocrysin. There may be sudden or progressive exaggeration of the more serious symptoms of the tuberculous infection, or there may be a poisoning of the kidney, of the liver, and even of the skin, with a drug dermatitis that is quite distinct from the relatively transient rash.

Only eleven cases were treated. The author believes that the treatment has not done harm in any case so treated. The sanocrysin seems to have a specific action on tissues infected by tuberculosis. This is suggested by an unusually inflammatory vascularization of the tuberculous areas in two cases examined postmortem. In other pulmonary cases which did not die there was evidence of a focal reaction in some pain in the chest, slight dyspnea, and often an increase for a while of adventitious auscultatory sounds. There was no proof of the tubercle bacilli being killed directly by the gold salt; but the inflammatory reaction in the tuberculous areas was attended by the escape into the circulation of toxins which produced general bodily reactions similar to those caused by large injections of tuberculin. Such general reactions were seen only in patients with active and well vascularized tuberculous lesions. In cases of tuberculous cervical glands and tuberculous fistula from the shoulder joint there was no reaction and no benefit.

The best results are seen in patients who react at first with sharp fever and rash. The next injection must then be delayed for a week after the fever reaction or even much longer so as to ensure that the following reaction shall be of less severe character. If the injections are spaced widely enough dangerous reactions and loss of weight can be avoided.

Tuberculous Adenitis Treated by Radium.—Philip Gosse (*Lancet,* April 24, 1926) obtained the following results in the treatment of fifty consecutive cases of tuberculous adenitis with radium: thirty-seven cures, nine improvements, three cases unimproved, and one death. These statistics give a very good idea of the results to be expected from such treatment.

The technic itself is simple. The glands to be treated, having been carefully located and palpated, are marked out on the overlying skin with a dermographic pencil. Over these localities "half strength" plates, i.e., plates covered by 2.5 mg. radium element to each square centimeter of surface, and covered by a sheet of Monel metal 0.3 mm. in thickness and screened with silver 1 mm. in thickness, are applied, and held in place by pieces of adhesive plaster, covered by a few turns of a bandage.

The action of the radium on the tuberculous glands is the following: There is an ultimate fibrosis and an early disappearance of lymphocytes, which either disintegrate or are phagocytosed by macrophages. The lymphoid myeloblasts, except after large doses of radiation, do not perish, and later may reform lymphocytes. The lymphoid follicles atrophy, only the central cells remain. The endothelial meshwork of the gland remains little altered, except for a great increase of fibrous tissue, so that the whole gland, shrunken from the loss of lymphocytes and other cells, comes to consist of narrow spaces lined by endothelial cells running through thick fibrous tissue. In this tissue the tubercles persist, more especially the giant cells, and here tubercle bacilli have been found persisting many months after radiation. It has been concluded from these appearances that the good clinical results are due to the creation of a site unfavorable to the growth of the tubercle bacillus, rather than to any direct action of the radiation on the bacillus. The dose of radiation given is always very much less than the lethal dose for the bacillus; nevertheless, a direct action on the bacillus may also be a factor.

Diagnosis of Clinical Hilum Tuberculosis.—John B. Hawes, 2nd (*Boston Medical and Surgical Journal,* January 21, 1926) says that there are many instances where a positive diagnosis one way or the other is impossible and where we must simply play safe and build up the child. But he finds the following of help to him.

For a positive diagnosis: exposure, real malnutrition and real underweight, ease of tire, being tired all the time, and temperamental changes. Of importance but not essential to a diagnosis are a positive Von Pirquet reaction, and x ray evidence of marked hilum changes.

For a negative diagnosis, presence of tonsils, adenoids, etc. that can account for symptoms, apparent but not real underweight, negative Von Pirquet repeated in absence of factors that would tend to make it negative, and absence of ease of tire and fatigue.

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Gregory Stragnell, M. D., *Editor*

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Medicolegal Notes.

HYPERSUSCEPTIBILITY TO NOVOCAINE NOT A DISEASE

The Circuit Court of Appeals, Fourth Circuit, holds, Mutual Life Ins. Co. of New York v. Dodge, 11 F. (2d) 486, that death resulting from the local administration of novocaine preliminary to an operation for the removal of tonsils, because of the patient's hypersusceptibility to that drug, was a death by "accidental means" within a clause in an accident insurance policy covering death directly from bodily injury. Experts testified that the supersusceptibility was not an infirmity but a peculiarity, and was not covered by the exception in the policy of death "from bodily or mental infirmity or disease of any sort," "infirmity" and "disease" being considered practically synonymous, and to refer only to an ailment or disease of a settled character.

STATEMENTS TO DIAGNOSING PHYSICIAN WAIVED IN POLICY

A life policy provided that it should not be effective unless the applicant had not consulted or been treated by a physician since his medical examination. The fact was that he had not only been treated, but that a serious operation had been performed. The policy also waived all provisions of law forbidding physicians who had attended or examined him to disclose information thereby acquired. In a suit for cancellation and rescission of the policy for fraud, the federal district court for New Jersey holds, New York Life Ins. Co. v. Renault, 11 F (2d) 281, that fraud in the procurement of the policy was shown, and that statements made by the insured to his physician for the purpose of guidance in diagnosis and treatment of disease were clearly admissible in evidence. The privilege was expressly waived, and failure to receive the physician's testimony would result in fraud.

LACK OF CAUSAL CONNECTION BETWEEN ACCIDENT AND INJURY

In an action for injuries alleged to have been sustained when a street car ran off the track and collided with an automobile, which in turn struck the plaintiff, the Alabama Supreme Court, Columbus Electric & Power Co. v. Downs, 106 So. 593, was of opinion that there was no causal connection between the accident complained of and the loss of plaintiff's right leg, which was amputated about ten days later, and which was the principal item of damage complained of. The leg appeared to have been amputated on account of a varicose ulceration of long standing, incurable and dangerous to life. The surgeon who performed the operation testified that it was done on his suggestion, and that the injuries received by plaintiff in the accident were superficial scratches, which contributed nothing to the necessity for an amputation. Judgment for plaintiff was reversed and the case remanded.

EVIDENCE AS TO EFFECT OF AUTOMOBILE ACCIDENT

In an action for personal injuries resulting from a collision between the plaintiff and the defendant's automobile the Wisconsin Supreme Court, Gerber v. Wloszczynski, 206 N. W. 206, said that the fact that an enlargement of the heart was not detected until two and one half years after the accident raised a doubt as to whether it resulted from the accident. The testimony of a physician that he believed it quite possible that the mitral regurgitation and enlarged heart then first observed resulted from infection was held not to be opinion evidence based upon a reasonable certainty. It was held that, on a new trial, granted because of excessive damages, the opinion of a medical expert witness for the defendant that the regurgitation and enlarged heart resulted from congenital malformation would make it incumbent to meet it with an effective rebuttal.

MALPRACTICE IN LEAVING CLIPS ATTACHED TO CERVIX OF WOMB

A surgeon performed a vaginal operation on the plaintiff. Two metal clips used as sutures were left in the neck of the womb, where they remained for more than three years, causing pain and hemorrhages. Upon their removal plaintiff's trouble ceased. The Minnesota Supreme Court, Fowler v. Scheldrup, 207 N. W. 177, held that the evidence was sufficient to justify the jury in finding that the defendant inserted the clips and failed to remove them and that the presence of the clips was the proximate cause of plaintiff's trouble.

ALLOWANCE OF EXPENSES FOR FUTURE MEDICAL ATTENTION

The question of whether expenses for future medical attention should be allowed in a personal injury action was held properly submitted to the jury where it appeared that the plaintiff had only light perception in his left eye, that the retina was detached on one side, that this condition was permanent, and that at the time of the trial whenever plaintiff became warm at his work he felt a severe pain in his left eye, and his right eye would flood up so that he could not see with it for some time. Halley v. Federal Truck Co. (Mo. App.), 274 S. W. 507.

PERSONAL INJURY ACTION

In a personal injury action by a married woman it was held error to include bills for medical attention and hospital services which had been paid by plaintiff's husband, since the Missouri Married Woman's Act, which authorizes her to contract as a feme sole and makes her separate earnings her own property, does not change the commonlaw rule by which the husband is primarily liable for the support of his wife, which includes medical attention and hospital services. Had plaintiff paid the bills, she could have recovered for them in the action. In the absence of a showing that she did so, the right to recover therefor was in her husband. Irwin v. McDougal (Mo. App.), 274 S. W. 923.

COMPETENCY OF MEDICAL MAN AS WITNESS IN MISBRANDING CASES

If it appears, in a misbranding proceeding, from the testimony of a witness on preliminary examination, that he is learned in the science of chemistry, or has been regularly and legally admitted to the practice of medicine, and that he has knowledge of the drug elements contained in articles transported in interstate commerce and their efficacy or lack of efficacy as curative agents, used either separately or in combination in the treatment of the diseases specified on the label, his opinion on that subject is competent evidence regardless of whether he has had actual experience or observation of the effect of the use of such drugs in the exact form in which they are transported in interstate commerce. The weight of his evidence is a question for the jury. Goodwin v. United States, 2 F (2d) 200.

SALE OF JAMAICA GINGER TO BE USED AS EVIDENCE

The Circuit Court of Appeals, Sixth Circuit, holds, Sherman v. United States, 10 F. (2d) 17, that under section 4 of Title 2, National Prohibition Act, forbidding the sale of medicinal preparations "for beverage purposes, or under circumstances from which the seller might reasonably deduce the intention of the purchaser to use them for such purposes," there is no violation of law in which the seller can participate, either by direct purpose or by equivalent indifference and negligence, unless the purchaser at the time of the purchase intends beverage use; and a sale of Jamaica ginger to a person who intended to turn it over to an officer for use as evidence did not sustain a conviction of the seller.

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The Present Status of Our Knowledge Concerning the Thymus Gland

I. A. ABT, M.D.
Chicago

The thymus is an organ which has great interest for the anatomist, physiologist, and morphologist, though none are more vitally concerned than the practitioner and specialist in pathology of childhood. It is of striking significance that this organ occurs in the higher vertebrates, reaches its maximum size during early life, and undergoes retrogressive changes at maturity. One would assume *a priori* that this organ must have some relation to the functions of growth and development. In spite of the immense amount of energy and labor which have been directed toward the solution of the problems concerned in the anatomy and physiology of the thymus, there has been no uniform agreement by the various investigators.

HISTOGENESIS

There is still considerable uncertainty concerning the origin of the thymus and the discussion goes on. The consensus of opinion, however, favors the view that the thymus is an epithelial organ that eventually becomes infiltrated with lymphocytes. This has been referred to as the infiltration or immigration theory.

The epithelial components in various mammals are of diverse origin; in some they are ectodermal, in some entodermal and in others they are combined ectoentodermal. In man the lymphocytic infiltration is supposed to begin during the second month of intrauterine life.

Hammar (1) believes that the thymus is not a transitory organ but that it persists more or less throughout life. At puberty its parenchyma begins to be reduced in size, and this process is known as age involution.

The organ increases in size from infancy up to the period of age involution. After this time a rapid reduction in the bulk of the parenchyma of the organ occurs, which together with the interstitial connective tissue is replaced by adipose tissue which forms the greater part of the organ at this period.

At age involution the cortex of the gland is first diminished in size. A little later on the medulla undergoes reduction, and still later the number of Hassall's corpuscles begins to diminish; and this diminution continues.

The nature of the involution as is shown by histological study consists of simple atrophy. The individual structure of the gland continues though it is smaller and there is diminution in the number of cells. In an atrophied thymus, one still finds remnants of cortex, medulla, reticulum and Hassall's corpuscles.

FUNCTION

The function of the thymus gland remains a question in physiological speculation. It has already been pointed out that the nature of the cellular elements and their source of origin has been a matter of controversy. As has been said, the thymus in the first stage of its development is an epithelial structure, but in its growth it becomes transformed into a structure resembling a large lymph gland, containing many lymphocytic cells.

While some believe that these cells are true lymphocytes derived from the mesoderm, and that they have migrated into and replaced the epithelial tissue, others believe that they are epithelial in origin; possibly arising from repeated division of the original epithelium and remaining epithelial to the end. Any view concerning the function of the thymus must depend on the view adopted concerning its structure.

Stewart (2) in an excellent résumé points out that if the thymus in its fully developed state represents a collection of lymphocytes, it would appear quite unlikely that it should possess functions different from other collections of lymphocytes.

On the other hand if the essential elements in the organ are epithelial, they may well, like the epithelial elements of the thyroid, or of other glands with an internal secretion, be concerned in the elaboration of substances which exert an important influence on growth and nutrition.

While there are various views as to the nature of the cellular elements the view of Maximow (3) and Hammar (4) has most supporters at the present time. They believe that the thymus is an epithelial organ containing lymphocytes. They also believe that the thymus reticulum represents the remnant of the original epithelial nature of the gland, and that this reticulum persists, even after involution has occurred. They think further that the organ is of a twofold nature and may function both as an epithelial and a lymphoid structure. This conception is of fundamental importance. If we attempt to show that the thymus is concerned in the production of an internal secretory substance, we must somehow admit that it contains an epithelial structure.

From the foregoing statements, it is evident that opinion is divided as to whether the thymus is an

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organ of internal secretion, or whether it has a function similar to that possessed by other hematopoietic organs, such as the spleen and lymph glands.

Sajous's (5) opinion is that the thymus is not the source of an internal secretion. He considers that its function is to supply through the agency of the lymphocytes, the excess of nucleins, which the body requires during the period of accelerated growth. The osseous, nervous, and genital systems need an extra supply during infancy, childhood or even adolescence.

The nucleins are needed in the rapid multiplication of the cellular structures.

He also believes that the thymus gland supplies nucleins in abundance, that it takes part in the oxidation and autoprotective processes of the body, and that it has some important relations to phosphorus metabolism.

Physiologists have pointed out that the nuclein substances characteristic of the nuclear framework of the true glands are much more abundant in the thymus than in the lymph glands.

Hoskins (6) reports a definite relationship between the involution of the thymus and a decrease in the percentage of lymphocytes in the blood.

Friedlander (7) thinks that the thymus functions as a lymphoid organ in infancy and childhood because of the presence of the large number of leucocytes, especially lymphocytes in the blood, during the earlier years of life, and that they must be important in the growth of the organism. He believes that their presence in increased number is bound up with the question of immunity and resistance to infection which occurs in all animals.

ORGAN OF INTERNAL SECRETION

The earlier experiments of Basch (8) who attempted to show the internal secretory function of the gland and its intimate relation to thyroid action, as well as his theory that thymus extirpation caused disturbances in the intelligence of the experimental animal, have not been corroborated by more recent investigation. Basch thought that after extirpation of the thymus an increase in the electric excitability occurred similar to that occurring after extirpation of the parathyroid.

The observations of Basch were confirmed by Klose (9), Vogt, and Matti (10). These latter observers thought the abnormally obese animals produced by extirpation of the thymus had developed rickets. Later experiments were conducted by Svehla (11) who injected thymus extracts, implanted thymus glands and fed thymus substance. He believed that intravenous injection of dried thymus substance in solution caused a fall in blood pressure and had a specific effect on cardiac rate and respiration. Sometimes sudden death occurred.

These experiments were not corroborated by subsequent investigations. If Svehla's work had proved the specific action of this extract, he would have had evidence of the internal secretory function of the thymus gland. But the significance of an endocrine gland depends entirely upon the proof of a specific secretion and its characteristic effects.

This proof is still lacking in the case of the thymus. But it should not be considered that the thymus is a superfluous organ. The very fact of its presence during birth and young life and its persistence in rudimentary form, suggest at least that it has a place in animal function.

Whether it is necessary to life has not been proved. Congenital absence of the thymus has been described in the new born and its absence has been accidentally discovered due to death from intercurrent diseases. How often it may remain undiscovered is altogether in the realm of speculation.

According to Park and McClure (12) the symptoms and pathological changes following thymus extirpation are almost without exception due to the changes which occur in laboratory animals as the result of confinement, improper food, unhygienic conditions, bacterial and parasitic infections.

These experimenters conclude that the thymus is not essential to life in the dog. They find that extirpation of the thymus produces no detectable alteration in the hair, teeth, contour of the body, muscular development, strength or activity of the experimental animal. Extirpation of the thymus probably does not influence growth or development nor produce alteration in the organs of internal secretion.

In contradistinction to the experiments of Park and McClure, one still finds it stated in standard textbooks of physiology that there seems to be a relation between the thymus and the sex glands.

Calzolari (13), Henderson (14), Paton (15), and others find that castration would seem to delay the involution of the thymus, and might even cause thymic hypertrophy. On the other hand, after thymectomy there is often a hypertrophy of the glands. According to Hoskins (16), a definite relationship has, however, not as yet been proved. The function of the gland may differ in various animals.

Gudernatsch (17) showed that in feeding thymus gland substance to tadpoles their growth was increased after feeding the gland substance twenty days; they were twice as large as at the beginning of the experiment. He thought that the increase in size depended more on swelling or imbibition than on cellular growth.

Abel (18) says that in man the thymus occupies a doubtful position as an organ of internal secretion, though in some of the lower animals such as birds he believes that the thymus undoubtedly produces internal secretion.

The investigations are divided as to the relationship between the thymus and the organs of internal secretion. It is obvious that the solution rests upon the fundamental fact of whether the thymus produces an internal secretion. In Finkelstein's (19) recent textbook he states that he is inclined to the opinion that removal or absence of the thymus causes changes or hypertrophy of the organs of internal secretion such as thyroid, adrenal, testes, ovaries, and pancreas. This opinion, as has already been indicated has not been concurred in, nor does it seem conclusively proved, by the experiments of numerous investigators.

The relationship of the thyroid gland to the thymus has also been investigated. Herdinger (20) found seven cases of enlarged thyroid in twelve cases of so-called thymic death in the newborn.

There are many reports which show a combination of exophthalmic goitre and thymic hyperplasia. McKenzie (21) noted in thirty-six postmortems on

patients who died of exophthalmic goitre the most constant feature next to an enlarged thyroid was an enlarged or persistent thymus. Confronted by all this confusing evidence, as well as by the uncertainty of the morphological nature of the gland, we are in agreement with modern investigators that the endocrine function of the thymus in man is doubtful or at least not proved.

PATHOLOGY

The thymus is readily affected and the parenchyma reduced by acute infections and chronic diseases. Involution occurs not only as the result of disease but also after nutritional disturbances, particularly starvation. The röntgen ray causes rapid reduction in the size of the gland. It is also atrophied in certain animals during the period of hibernation.

Pregnancy in the human being as well as in certain animals causes the thymus to diminish in size. It is conceded by a majority of investigators that involution may be produced by inanition. In this condition, the diminution in the number of Hassall's corpuscles is the characteristic feature. If the underfeeding continues for a long time and constitutes an actual condition of starvation, the child's thymus may undergo a marked atrophy. The cortex diminishes in size, until a mere remnant remains, the principal part of which is composed of compressed reticulum cells containing lipoid material. Under these circumstances the medulla atrophies as well. The gland may come to weigh only one or two gms. whereas the normal gland weighs about fifteen gms. It is reported by some that an atrophied thymus in an undernourished or hungering child may become normal in size and structure, if the child's nutritional state returns to normal. Conversely, it has been thought that the gland might be increased in size by feeding, though there seems to be no evidence in favor of this view.

Involution of the thymus is also produced by the röntgen ray. In two or three hours after irradiation a wholesale disintegration of the lymphocytes takes place while the reticular cells resist to a greater extent, and tend to remain intact for a longer time. The disintegrated lymphocytes and their nuclei are taken up by the reticular cells in the manner of phagocytes and there they seem to be digested and dissolved. The reticulum persists and as has been suggested the thymus devoid of lymphatic cells, with persistent reticulum, constitutes an epithelial organ.

Circulatory disturbances may occur in the thymus as a part of a general circulatory disease. In newborn infants hyperemic disturbances have been described in hyperplastic thymus glands. Apoplexy or hemorrhages into the thymus have been described in various infections, measles, pertussis, pneumococcus infections and phosphorus poisoning. Acute inflammatory changes in the thymus have been observed in diphtheria, erysipelas, variola, and measles.

THYMUS ABSCESSES

Primary abscess formation may occur as the result of an acute inflammatory thymitis.

SYPHILIS

Hemorrhage may occur into the parenchyma of the gland as the result of congenital syphilis. Most frequently, however, the luetic lesion in this location consists of an interstitial inflammation. Less often gummata are found. Associated with the gumma are frequently observed Dubois abscesses. It has been shown that they are due to fetal arrest of development on a syphilitic basis and spirochetes have been found in the wall of the cyst, which naturally clarifies the specific nature of the disease. The socalled Dubois abscesses are usually multiple, the cysts contain a turbid fluid resembling pus. They vary in size from peas to hazel nuts; occasionally some of the smaller cysts coalesce to form a large cavity in the gland.

TUBERCULOSIS

Primary tuberculosis of the thymus is extremely rare. Occasionally the gland becomes infected from a mediastinal lymph gland. Under these circumstances miliary tubercles or a large caseous mass may be observed.

Sclerosing atrophy of the thymus may occur as a result of cachectic conditions or it may be observed after syphilis, tuberculosis and severe types of intestinal infections. It has been supposed by some authors that the atrophy of the thymus was the cause of the general atrophic condition of the infant. We believe, however, that the diminution in size of the gland is secondary to the general inanition.

NEOPLASMS

The benign tumors of the thymus such as are observed in adults are rare in children. Malignant tumors are more frequent in the latter—sarcoma, lymphadenoma and lymphoma. The literature contains a report of twenty-two cases of sarcoma in young life. Tumors of epithelial origin are rare in childhood. On the other hand, leucemia may produce myeloid tumors of the thymus. Other conditions such as pseudoleucemic tumors and chloroma may occur. Hassall's corpuscles are usually observed in tumors of the thymus gland.

HYPERPLASIA

The most frequent and most interesting change that occurs in the thymus is diffuse hyperplasia. Whether a hyperplasia actually exists can only be demonstrated with accuracy at postmortem. Even under normal conditions the weight and size of the organ are subject to great variations and for this reason it is difficult even to differentiate a normal from a pathological gland. The size and weight of the thymus is in a certain way proportional to the general nutrition. If the infant loses decidedly in weight the gland diminishes in size, though this is not a constant condition.

The anatomical diagnosis of hyperplasia is established more frequently now than formerly. In well nourished children the gland may be considered hyperplastic if it weighs more than twenty grams in the first year and twenty-five grams in the second year. Hammar (22) gives the following table of normal weights of the thymus at various ages:

Years	*Grams*
Newborn	13.26
6-10	26.1
11-15	37.52
21-25	24.73
56-65	16.08
66-75	6.

On the other hand, it must be recognized that there are great individual differences. In atrophic children,

the thymus may show a normal weight, but this should not be considered as an expression of a pathological condition. The normal as well as the hyperplastic thymus may be demonstrated by physical examination. If one practises light percussion one may map out the organ as an irregular triangular dullness, the apex of which reaches to the second rib and the lateral dullness may extend to each sternal line or even beyond.

Dullness which extends one cm. beyond the limits stated may be considered abnormal. Calcified mediastinal glands may give similar findings. The x ray may aid in recognizing thymus enlargement. The interpretation of the shadow must be made with great care. A hypertrophy should be accepted only when the middle shadow lies over the heart and extends beyond the sternovertebral shadow. As a rule the mass appears larger on the left than on the right. A similar shadow is caused by the veins of the mediastinum, or by marked venous distention. These conditions occur readily in cases of dyspnea and are frequently confused with thymus hypertrophy. The shadow produced by the veins is broader on the right than on the left; it is also increased in the vertical direction. The shadow also changes with respiration and in deep inspiration it may disappear. There are instances that show that the gland may weigh thirty-five, forty or even fifty grams. Even today the teachings concerning the hyperplasia of the thymus gland are not clear.

The significance of thymus hyperplasia is not cleared up and the view that laryngismus stridulus is a form of thymic asthma due to the pressure of the swollen gland on nerves is obsolete. It has been shown that a large gland may be unassociated with laryngismus and on the other hand laryngismus may occur without enlargement of the gland. Congenital laryngeal stridor is frequently explained on grounds other than thymic enlargement. The enlarged organ is in many instances suspected of having a causal relation to respiratory disturbances, to heart affections and to sudden death.

HYPERPLASIA AND RESPIRATORY DISTURBANCES

It is possible that thymic hyperplasia may be the cause of dyspnea. Cases have been described in which a persistent dyspnea occurred either shortly after birth or after several months, or even in the second year of life.

In many of these cases symptoms of suffocation occur, and increased thymic dullness may be demonstrated. Occasionally a portion of the gland may be felt, tumorlike, above the upper thoracic opening, i.e., the sternal notch, particularly during the period of expiration. In these cases tracheotomy gives no relief. Unobstructed breathing may only be established by introducing a tube as far as the bifurcation of the trachea. The obstructive symptoms may also be made to disappear if the gland is detached from the trachea and bronchi and sewed to the sternum, or if the extrathoracic part is excised.

In some instances the dyspnea may be caused to disappear if the patient is turned on his abdomen. In all probability the cause of the socalled asthma thymicum is stenosis of the trachea due to pressure or it is due to a wedge shaped thickened portion of the gland which presses on the bifurcation. Possibly under some circumstances there may be pressure on the nerves. This is analogous to the experience with goitre which may produce suffocation without tracheal stenosis.

It should be observed, however, that the conditions noted are rare in comparison with the frequency of thymus hyperplasia and if they occur at all they must depend on definite changes in size and shape of the gland. In considering all these facts, Finkelstein (23) says he has never seen a case which belongs to the class described above, and all of these cases which he at first called thymic asthma, and which were described by the röntgenologist as thymic hyperplasia, were always found to be due to another cause if carefully examined. In addition to this he says that many surgeons of the largest experience hold the same view, though other observers from other regions have in a short period of time described whole series of cases.

Is it possible that geographical variations occur as in the case of goitre? Finkelstein (24) further remarks that the diagnosis is too frequently made without due consideration. The diagnosis is based on the expiratory congenital stridor, dyspnea either continuous or remittent, suffocative attacks, dullness over the sternum and a typical sternal shadow in the x ray picture. The dullness and the x ray shadow may both be due to distended veins in this region. In some instances the diagnosis may be confused with cardiac asthma.

THYMIC CONSTITUTION

The most important and constant symptom which has led to the diagnosis of status thymolymphaticus has been the thymus death. Experience from various quarters has shown that in both children and adults the most insignificant procedures and traumata have caused death. Some have died while bathing, others after insignificant wounds or after a slight whipping or emotional excitement. A case is reported where a child was turned on his abdomen because of dyspnea. He suddenly became blue, dyspneic and in a few minutes death had taken place. Autopsy showed no adequate cause of death. There was no aspiration of stomach contents. The thymus weighed twenty-four grams, was obviously enlarged. The parathyroids and adenoids, microscopically at least, showed no changes. On gross examination it was found that the mesenteric glands and lymphatic structure of the intestine were enlarged. The heart was dilated and relaxed. Medical men are particularly interested in the deaths which ensue from minor manipulations and operations and the administration of an anesthetic. Death had been reported after a salvarsan injection, and the autopsy showed status thymicolymphaticus.

Arnold Paultauf (25) was the first to describe status thymicolymphaticus. He assumed that the condition was a lymphatic chlorotic diathesis in which the most important anatomical characteristics were general hyperplasia of the lymphatic tissue and thymus, a small heart and narrow vessels. Such individuals are likely to die suddenly, death being due to a cardiac failure.

Lubarsch (26), in considering the whole subject is rather skeptical as to the prevailing theories concerning the relationship between sudden death and thymic and lymphatic hyperplasia. He believes that it will be a fruitful source of knowledge to investi-

gate the relationship between the adrenal and thymus, and particularly to study the thymus in all serious diseases of the adrenals. He also says that it cannot be denied that there may be such a condition as status lymphaticus although the anatomical conditions ascribed to this affection may be found in all acute and chronic affections such as measles, scarlet fever, whooping cough, tuberculosis, and syphilis; also in nutritional disturbances as well as pharyngeal and tonsillar infections.

Not infrequently, he says, where a diagnosis of thymic death has been made the lethal result has been found to be due to acquired secondary conditions and not to a constitutional anomaly. He reports the case of a child where the diagnosis of thymic death was made by a young pathological assistant, but careful examination showed that death occurred from streptococcus sepsis.

The generally accepted conception of status thymicolymphaticus, consists of a general hyperplasia of the lymphatic system and an enlargement of the thymus, though enlargement of this organ may be absent. The medullary substance of the adrenal body is frequently hyperplastic. The heart is commonly dilated and hypertrophied. Young infants and children who present this condition of status lymphaticus have a swollen, pale appearance. They are often fat, have low resistance to disease and often die suddenly during acute infections.

In death from status lymphaticus, the end comes suddenly and unexpectedly with symptoms of heart failure. The patient falls, respiratory difficulty occurs, characterized by cyanosis and dyspnea, the superficial veins are distended, a few twitchings occur, sphincters relax and the patient becomes livid.

During the course of hyperacute toxemia, rather suddenly or unexpectedly, restlessness and anxiety are observed as well as dyspnea. Diarrhea associated with rapid loss of weight and unconsciousness occur. Twitchings are frequent. Very significant and constant is the agonal rise in temperature which may reach 105°, 106° or 107°. Occasionally sudden death occurs associated with laryngismus stridulus and sudden syncope. It has been thought in some instances the lethal issue was due to spasmophilia and not to lymphatic constitution.

Other forms of hypersensitiveness must be considered. Possibly some cases, where the patient in the course of a few hours is attacked by high fever and coma, in a few hours terminating in death, depend not only on the infection but the low resistance of the child. A similar significance may be attached to the chronic nutritional disturbances and to the debility which results from undernutrition. Infections and alimentary influences may lead suddenly to toxic states and death.

In another small group the adrenal body may suffer from infection. An acute hemorrhage may occur into this organ and sudden death results. The tendency to sudden death in both varieties of cases may depend in some degree on the action of the adrenal bodies. If the secretion is diminished the effect of the blood pressure raising influence is removed as well as the maintenance of vascular tonus, possibly also damaging the heart and the tonus of the circulation.

TREATMENT

If we assume the correctness of the theory that symptoms may be due to an enlarged thymus, we must adopt some method of treatment which will reduce the size of the organ. Friedlander (27), in 1904, was the first to treat enlarged thymus glands with the x ray. He has shown clinically and experimentally that it is possible to produce involution of the thymus by this method of treatment. Friedlander and Lange (28) exposed the thymus region of animals to the x ray. They demonstrated that the spleens of the experimental animals showed reduction in number, size and clearness of the malphigian corpuscles. They treated 250 cases with two deaths. In mild cases a single treatment over the anterior surface of the chest is sufficient to bring about improvement. Usually the intervals between treatments has been one week unless the urgency of symptoms has suggested more frequent applications.

Friedlander (29) says no ill effects have followed the use of x ray treatment in competent hands, though a case is recorded by M. J. Konikow (30) where tetany occurred following x ray exposure of the thymus in a baby five weeks old. It must be assumed in this case that the rays caused atrophy of the parathyroid glands.

RADIUM

Several observers have used radium as a substitute for the x ray and report favorable results. The radium is filtered through silver and the tube is placed over the anterior aspect of the chest, directly over the thymus gland. It is stated that only one treatment is required and that there is no danger in one treatment.

DRUGS

No results have been obtained nor are any to be expected from the use of drugs.

SURGICAL TREATMENT

The first operation was done by Rehn (31) in 1896. He detached the thymus from the underlying organs and sewed it to the sternum. The results of this operation were not favorable. Later Vean and Oliver (32) contrived the operation of thymectomy. Parker (33) in his monograph, 1913, showed that the mortality from this operation was thirty-three per cent. The operative treatment has been almost entirely superseded by the x ray treatment.

SUMMARY

1. It is doubtful whether the thymus is the source of an internal secretion in human beings. It is probable that it supplies the excess of nucleins which the body requires during the period of accelerated growth.

2. It should not be considered that the thymus is a superfluous organ.

3. On the other hand, extirpation of the gland in the dog does not influence growth or development, nor does it seem to produce alteration in other organs of internal secretion.

4. A certain number of observers still maintain that there seems to be a relation between the thymus and the sex glands.

5. Reports seem to indicate that exophthalmic goitre may produce at times thymic hyperplasia.

6. The thymus participates in a variety of dis-

eases. It atrophies during starvation; general circulatory disturbances affect the gland. It may also be the site of abscess, acute inflammation, syphilis, neoplasms, sclerosing atrophy.

7. The gland reaches its greatest weight from the eleventh to the fifteenth year. From this time on it gradually atrophies though remnants in most cases continue throughout life.

8. Large thymus may cause dyspnea in young children, though the obstructed breathing is frequently due to other causes.

9. Status lymphaticus is a condition in which the most important anatomical characteristics are hyperplasia of the lymphatic tissues and thymus, a small heart and narrow vessels. Such individuals are subject to sudden death.

10. The treatment of enlarged thymus consists of the use of x ray or radium. Surgical treatment is obsolete.

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Chronic Hereditary and Familial Hemolytic Jaundice

With Splenomegaly and Hepatomegaly: Observations on Five Cases Under Study

WALTON FOREST DUTTON, M.D.
Amarillo, Texas

The chief purpose of this report is to place on record the results which have followed the treatment of chronic hereditary and familial hemolytic jaundice with splenomegaly and hepatomegaly by nonsurgical procedures differing in essential principles from those clinical methods of management in present general or special practice.

In order that a better concept of this comparatively rare condition may be presented, a résumé is a fitting introduction. Chronic hereditary and familial hemolytic jaundice with splenomegaly and hepatomegaly is closely related to the disease described by Murchison, in 1885, by Minkowski (1) in 1900, and by Chauffard (2) in 1907, as congenital or familiar hemolytic jaundice. The characteristic features common to both conditions are the marked increase in the number of reticulated red blood cells, and the great fragility of the red cells when exposed to hemolytic agents. They differ in the very decided functional activity of the liver and its relation to the reticuloendothelial system.

The course of these conditions is, in many ways, much the same, simulating pernicious anemia; it is one of crisis followed by periods of remission, but is not necessarily fatal. In some cases, as one now under study, the patient lives to the sixth decade. As a rule, a crisis follows fatigue, excitement, indiscretion in diet, stimuli to the vegetative nervous system, or acute infection. In the splenomegalic type, the patient vomits much bile, the spleen enlarges and becomes tender, and there may be a great increase in the degree of anemia present, with an absence of the concomitants of ordinary obstructive jaundice, such as light stools, choluria, pruritus and slight icterus. Chronic hereditary and familial hemolytic jaundice with splenomegaly and hepatomegaly shows the marked variation of obstructive jaundice with slight subicteric discoloration of skin and scleræ.

HEREDITY

The cases under study represent three generations in which the condition is traced back to and including two previous generations. Sex does not appear to be a factor in the transmission of disease. (Fig. 1.)

JAUNDICE

Jaundice, in these cases, has been present from birth. Crises bring about signs of obstruction of the bile passages; the stools are free of bile pigment, while the urine contains urobilin. These observations do not agree with the findings in the cases reported by Barker (3), Lewis (4), Giffen (5), and Krumbhaar (6).

I am inclined to think that their cases were not of the true type or that the cases now under study are atypical. This would seem improbable, on account of the meagre information available. Bilirubinemia is present, but not marked as in pernicious anemia.

In explanation of the pathogenesis of jaundice of this type, it is obvious that jaundice is due most frequently to impairment of the excreting function of the liver. That is to say, the condition is usually traceable to inflammatory or degenerative changes of the liver cells. Mechanical or other obstruction to the outflow of bile causes the bile to back up in the liver cells. This action damages the cells by inflammatory or degenerative process and facilitates the accumulation of preformed bile in the liver cells. The excretory function may be inhibited without impairment of other functions.

The spleen is enlarged, firm, and usually movable and seldom tender except during a crisis. It may extend five to eight finger breadths below the costal margin. The liver frequently extends from one to three finger breadths below the costal margin in the mammillary line.

The anemia, urine, and stools, factors of relative etiology, pathology and diagnosis have been freely discussed in the preliminary report (7). A summary of the cases under study, as presented at that time, noted that they differed from the usual forms of hemolytic jaundice. They differed in the very decided functional activity of the liver and its relation to the reticuloendothelial system.

During the periods of crisis, the concomitants of ordinary obstructive jaundice, such as clay colored stools, choluria, mild pruritus, and slight icterus are present. The blood picture is markedly characteristic, but at times exaggerated. This makes the diagnosis comparatively easy. An intimate study of these cases appears to implicate the extra hepatic bile passages and the reticuloendothelial system. In the production of crises, the neuromuscular reflex apparatus of the bile passages plays an important rôle. A total spasm of the region of the sphincter of Oddi with contractions of the gallbladder, which force bile back to the columns of the liver cells, produces a toxic irritative process of defense reaction in the hemopoietic apparatus.

REPORT OF CASES

Case I.—Mrs. C. B., a widow, aged fifty-six, height sixty-four and three quarter inches, weight 104¾ pounds, temperature 98°F., came under my service, November 11, 1924, complaining of attacks of gallbladder trouble and of indigestion. She stated that she had had a large spleen and liver since childhood; the grandfather had had liver trouble and enlarged spleen and died at the age of seventy of pneumonia; the grandmother died at ninety of old age; the father died at thirty-two of liver trouble; the mother was living and well at seventy-six; one paternal uncle and one paternal aunt died of liver trouble; one uncle died of abscess of the spleen; three children died in infancy; two daughters were living, one in apparent good health at thirty, who had had a cholecystectomy at twenty-nine; one in fair health at twenty-nine, who had had a splenectomy at twenty-six. Investigation revealed that these spleens were not enlarged from tuberculosis, syphilis or malaria.

The patient's habits had been good; she was of a nervous temperament. She had had the commoner diseases of childhood; socalled bilious fever at twelve; influenza in 1890, and frequent attacks since that time. The patient injured the lower end of the spine by a fall when sixteen; the forearm was broken two and five years before I saw her.

Examination of the respiratory apparatus was negative. The pulse was 78; there was occasional tachycardia; the radial arteries were palpable, and were not calcified; the heart and the aorta were normal. There was no dyspnea and no edema. The blood pressure was 100 systolic and 70 diastolic.

Blood examination revealed: red blood corpuscles, 4,120,000; hemoglobin, 60 per cent.; white blood corpuscles, 8,100; differential count: polymorphonuclear neutrophils, 48 per cent.; polymorphonuclear eosinophils, 1 per cent.; polymorphonuclear basophils, 1 per cent.; small mononuclears, 38 per cent.; large mononuclears and transitionals, 10 per cent.; a few normo-

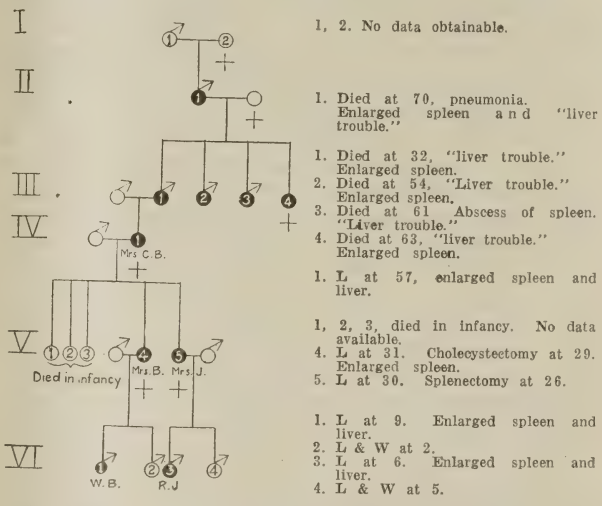
I
II
III
IV
V
VI
Mrs. C. B.
Died in infancy
Mrs. B.
Mrs. J.
W. B.
R. J.
1, 2. No data obtainable.
1. Died at 70, pneumonia. Enlarged spleen and "liver trouble."
1. Died at 32, "liver trouble." Enlarged spleen.
2. Died at 54, "Liver trouble." Enlarged spleen.
3. Died at 61 Abscess of spleen. "Liver trouble."
4. Died at 63, "liver trouble." Enlarged spleen.
1. L at 57, enlarged spleen and liver.
1, 2, 3, died in infancy. No data available.
4. L at 31. Cholecystectomy at 29. Enlarged spleen.
5. L at 30. Splenectomy at 26.
1. L at 9. Enlarged spleen and liver.
2. L & W at 2.
3. L at 6. Enlarged spleen and liver.
4. L & W at 5.

Fig. 1.—Occurrence of chronic hereditary and familial hemolytic jaundice with splenomegaly and hepatomegaly in five generations: All patients lived in the same community within the radius of half a mile. The cases reported in detail were: Case 1, IV, 1; Case 2, VI, 3; Case 3, VI, 1; Case 4, V, 4; Case 5, V, 5. L. and W. means "living and well."

blasts. Anisocytosis and poikilocytosis were marked. The blood platelets numbered 900,000. A few megalokaryocytes were seen (iron hematoxylin stain). The blood, stained with brilliant cresyl blue, showed reticulation of the red cells to thirty per cent. Test of red cells to salt solution showed that hemolysis began at 0.6 per cent. and was complete at 0.4 per cent. The color index was 0.8. The spleen was somewhat tender and movable, and extended four finger breadths below the costal margin. The Wassermann reaction was negative.

Attacks of indigestion and gallbladder trouble dated back to the age of twelve, but the patient had not associated the condition with enlargement of the spleen. Gaseous eructations and abdominal pain were relieved only by a hypodermic injection of morphine. Paroxysms came on at irregular intervals, varying from six months to two years. Pain occurred frequently after eating. There was slight constipation. Physical examination revealed the liver extending two finger breadths below the costal margin in the right mammillary line. The patient complained of tenderness on palpation of the right upper quadrant. The gallbladder was markedly enlarged, and stones were easily recognized. The stomach contents contained no free hydrochloric acid; the total acidity was thirty-eight per cent.; there was no occult blood; there were no Oppler-Boas bacilli. The duodenal

contents consisted of viscid fluid, neutral to litmus, and turbid; the bile was thicker and darker than normal; there were fragments of bile thrombi. The feces contained bile and urobilin, except during a crisis.

Examination of the urogenital apparatus showed hydronephrosis of the right kidney. The urine was normal except for indican and urobilin; there were a few casts and white corpuscles. The phenolsulphonephthalein output was forty per cent. in two hours. The pelvic examination was negative.

No mental anomalies were detected. The patient slept fairly well. There were occasional cramps in the limbs. Bilateral deafness had existed since 1890. There was slight pruritus after attacks of pain in the gallbladder. The scleræ and skin had a slight subicteric tint.

During the past year the patient had two mild attacks in which the crises were of short duration. Prophylactic measures were observed. Gastrointestinal sedatives were administered as required. Iron and arsenic were given by mouth. General condition was fair. Blood examination February 20, 1926: red blood corpuscles, 3,200,000; hemoglobin percentage 56 Newcomer; color index, 0.8; white blood corpuscles, 12,000. Differential count: polymorphonuclears, 53; lymphocytes, 35; transitionals, 2; eosinophils, 5; basophils, 5. Abnormal: normoblasts, 2; megalokaryocytes, 2; Turk's irritation form, 1; erythrocytes, abnormally small; marked polychromatophilia; some poikilocytosis. Reticulated cells 32 per cent. Fragility began at 0.49 per cent., and was complete 0.40 (control 0.44-0.34). Icterus index, 6.

Case II.—R. R. J., a boy, aged six, height forty-seven inches, weight forty-nine pounds, temperature 98.6° F., came under my service, November 17, 1924, complaining of headache, and pain in the left side (on exertion), and socalled biliousness. These conditions had existed since birth. He was the grandson of Patient 1. The father was living and well at twenty-seven; the mother was living and in fair health at twenty-nine; one brother was living and in good health at four; there were no sisters. In 1923, he had a slight attack of influenza.

The chest was normal. The right middle turbinate was enlarged. The nasal septum was deviated. The tonsils and adenoids were hypertrophied. The pulse was 80; the heart, normal. There was no dyspnea or edema. The blood examination showed: red blood corpuscles, 3,650,000; hemoglobin, 50 per cent.; white blood corpuscles, 7,800; differential count: polymorphonuclear neutrophils, 46 per cent.; polymorphonuclear eosinophils, 2 per cent.; polymorphonuclear basophils, 1.5 per cent.; small mononuclears, 39 per cent.; large mononuclears and transitionals, 8 per cent. There was marked anisocytosis and poikilocytosis. The blood platelets numbered 1,100,000. diminished resistance of red cells to salt solution began at 0.7 and was complete at 0.5. The color index was 1. Reticulated cells were 34 per cent. The lymph glands were normal. The spleen was hard, was movable, and extended five finger breadths below the costal margin. The Wassermann reaction was negative. The Pirquet test was negative.

The appetite was good. There were no eructations. The bowels were regular. During the attacks, the stools were clay colored and frothy. Palpation of the liver edge showed that it extended two finger breadths below the costal margin in the right mammillary line. The patient complained of slight tenderness over this area. Otherwise the examination of the abdomen was negative.

The patient voided a large quantity of dark, orange brown urine the first thing in the morning and several times during the day, but not at night. The urine was normal except for urobilin. The skin and the scleræ had a slight subicteric tint during exacerbations.

This patient had had three slight attacks during the past twelve months. The phenomena presented were much the same as noted before. The treatment was the same as given in Case I. August 14, 1925, tonsils and adenoids were removed. Blood examination, February 27, 1926, showed: red blood corpuscles, 3,560,000; hemoglobin percentage, 45 Newcomer; white blood corpuscles, 8,400; color index, 0.6. Differential count: polymorphonuclears, 23; lymphocytes, 75; basophils, 2. Abnormal: normoblasts, 1; myelocytes, 2; marked poikilocytosis; some achromia; marked anocytosis. Reticulated cells 12 per cent. Fragility beginning at 0.48 per cent. and complete at 0.36 per cent. (Control: 0.44-0.34.) Icterus index, 8.5.

Case III.—W. S. B., a boy, aged eight years, came under my service November 26, 1924, complaining of pains in the stomach and frequent headaches. The father was living and well at thirty-nine. The mother was living and in fair health at thirty. One brother was living at nine months, under treatment for rickets. There were no sisters. The patient had scarlet fever in 1921; whooping cough in 1923, and measles in 1924. A tonsillectomy was performed in August, 1924.

The respiratory and circulatory apparatus were normal. The blood examination revealed: red blood corpuscles, 3,100,000; hemoglobin, 60 per cent.; white blood corpuscles, 7,900; differential count: polymorphonuclear neutrophils, 48 per cent.; polymorphonuclear eosinophils, 1.5 per cent.; polymorphonuclear basophils, 1 per cent.; small mononuclears, 40 per cent.; large mononuclears and transitionals, 10 per cent.; a few normoblasts. There was considerable anisocytosis and poikilocytosis. The blood platelets numbered 980,000. The fragility test of the red corpuscles showed that hemolysis began at 0.58 per cent. and was complete at 0.36 per cent. The color index was 1.1. Reticulated cells numbered 20 per cent. The lymph glands were normal. The spleen was hard, was movable, and extended two finger breadths below the costal margin. The Wassermann and tuberculin tests were negative.

The patient had a good appetite. There were no gaseous eructations. Pain in the stomach occurred only at the time of a crisis, at various intervals extended from three months to eighteen months. The bowels were regular. Physical examination showed the liver extending one finger breadth below the costal margin in the right mammillary line; otherwise it was negative. The stools during exacerbations were clay colored. The urine was normal except for the dark, orange brown color and the presence of urobilin. The skin showed an earthy tint; the scleræ showed a slight subicteric tint, which was more marked at the time of the crises.

The usual prophylactic measures were carried out in this case. Improvement was satisfactory. The patient suffered one mild attack. Iron, arsenic and nuclein were administered intravenously.

Blood examination, February 20, 1926, revealed the following: red blood corpuscles, 4,880,000; hemoglobin percentage, 79 Newcomer; white blood corpuscles, 11,000; differential count: polymorphonuclears, 67; lymphocytes, 30; mononuclears, 1; eosinophils, 1; basophils, 1; erythrocytes very small; platelets slightly increased; marked crenation; color index, 0.8; reticulated cells, 17 per cent.; fragility began at 0.48 and was complete at 0.36; icterus index, 6.5.

Case IV.—Mrs. J. B., aged thirty, came under my service, September 15, 1924, complaining of weakness and a general rundown condition. She was the daughter of the patient in Case I and the mother of the patient in Case III. She had the more usual diseases of childhood and had had socalled bilious attacks since childhood. There was nothing unusual in the personal history except that when three months pregnant with the last child it was found necessary to remove the gallbladder during an attack. The gallbladder contained many stellate stones, which rapidly disintegrated after several weeks. Following childbirth she was confined to bed with septic fever. Since that time she had felt "generally all in," but after removal of the gallbladder had not had any bilious attacks.

The patient was fairly well nourished. Her lips were pale, and her skin presented a peculiar subicteric tint. The temperature was normal. The pulse rate was slightly accelerated, being 84 to the minute. The rate of respiration was 20 a minute. The thorax was normal. The edge of the spleen was on a level with the costal margin. The spleen seemed fairly hard, but movable. There was no marked tenderness. The liver, on palpation and percussion, was normal in size. The patient complained of a little tenderness in the right upper quadrant. Examination of the abdomen was otherwise negative. Pelvic examination revealed a lacerated perineum and laceration of the cervix uteri. Blood examination revealed: red blood corpuscles, 4,200,000; hemoglobin, 80 per cent.; white blood corpuscles, 7,850; differential count: polymorphonuclear neutrophils, 80 per cent.; polymorphonuclear eosinophils, 8 per cent.; small mononuclears, 18 per cent.; large mononuclears and transitionals, 6 per cent. The platelets numbered 400,000. The fragility test was normal: 0.45 and 0.3. The reticulated cells were 3 per cent. The Wassermann reaction of the blood serum was negative. The digestive apparatus showed nothing unusual. The urine was normal except for a trace of indican.

An examination of this patient November 23, 1925, showed a decided increase in weight. The general health during the past year was unusually good. Blood examination: red blood corpuscles, 4,520,000; hemoglobin percentage, 85 Newcomer; white blood corpuscles, 11,000. Differential count: polymorphonuclears, 63; lymphocytes, 30; mononuclears, 2; eosinophils, 4; basophils, 1.

February 26, 1926, this patient was stricken with an attack of influenza which precipitated the only bilious attack she had experienced since the first examination on September 15, 1924.

Examination on March 6, 1926, showed spleen on level with costal margin; slight subicteric tint. Blood examination: red blood corpuscles, 3,780,000; hemoglobin percentage, 67 Newcomer; white blood corpuscles, 12,600; polymorphonuclears, 63; lymphocytes, 31; mononuclears, 2; eosinophils, 3; basophils, 1; no crenation or anicytosis; color index, 0.9; reticulated cells, 3 per cent.; fragility: 0.52-0.40. Icterus index, 7.

Case V.—Mrs. L. R. J., daughter of the patient in Case I and mother of the patient in Case II, seen October 10, 1924, had been under the service of Dr. H. Z. Giffen of the Mayo Clinic for observation and treatment. Dr. Giffen wrote that the patient came under his observation, August 19, 1921. She had been well up to the age of eight years. At that time she became quite anemic, but not especially jaundiced. Later occasional attacks of intermittent jaundice developed until the time of operation. During the eight months preceding her visit to the Mayo Clinic she had had more trouble than formerly.

The spleen was considerably enlarged. The red cell count was 2,900,000, and the differential count showed nothing of especial significance. A reticulated cell count was high, nine per cent., and the fragility of the red cells was definitely increased. At that time a history of the mother's condition was obtained. She stated that the mother had an enlarged spleen and had been jaundiced for about twenty-five years. The mother's father was said to have died of some sort of liver trouble. One child of the patient was said to be anemic and to have recurrent socalled bilious attacks. Splenectomy was done, September 27, 1921. The spleen weighed about 1,000 gm.; gallstones were not present. The common duct was normal; the appendix contained fecal concretions and was removed. Exploration was otherwise negative.

A reexamination was made of the patient on May 5, 1925. This revealed, in addition to the condition outlined above, incipient pulmonary tuberculosis involving the upper left lung. There was dyspnea on exertion. Weight, 105 pounds. Blood pressure: 100 systolic, 70 diastolic. Blood examination: red blood corpuscles, 3,800,000; hemoglobin percentage, 70; white blood corpuscles, 8,200. Differential count: polymorphonuclears, 55; eosinophils, 1; basophils, 1; small mononuclears, 30; large mononuclears, and transitionals, 5; few normoblasts; some poikilocytosis; blood platelets, 600,000. Fragility test: Hemolysis began at 0.5 per cent. and was complete at 0.38 per cent. Codliver oil was prescribed in addition to the general supportive diet. Iron cacodylate, sodium cacodylate and nuclein were administered, twice weekly, intravenously. Blood examination March 6, 1926: red blood corpuscles, 4,460,000; hemoglobin percentage, 66 Newcomer; white blood corpuscles, 13,200. Color index, 0.7. Differential count; polymorphonuclears, 40; lymphocytes, 60; very slight poikilocytosis; myelocytes, 1. Reticuled cells, 4 per cent. Fragility began at 0.48 and was complete at 0.40. Weight, 135 pounds. General condition excellent. Icterus index 9.

TREATMENT

The treatment of this disease should not be confused with that of splenomegalic jaundice, hemolytic icterus, or congenital hemolytic jaundice. Chauffard (9) reports a case of congenital hemolytic jaundice in

a woman, aged forty, in which splenectomy resulted in the disappearance of the jaundice within a few days, and in an apparently complete recovery. Examination of the blood two years later showed marked improvement, but hemolysis was still evident. No granular erythrocytes were found (before the intervention they ranged from twelve to fifteen per cent.). It appears, according to Chauffard, that the bone marrow, affected by the altered spleen, protects itself by producing granular erythrocytes. The toxic condition of the marrow and the fragility of the blood corpuscles long persist, but do not provoke any noticeable reaction. Splenectomy checks the destruction of the blood corpuscles (the spleen process); while the improvement of their fragility occurs later (the marrow process). Evidently, in this condition, the jaundice and the hemolysis do not depend on each other and may be dissociated by removing the spleen.

These conditions are similar to the disease under discussion, but, strictly speaking, pathologically different. For this reason the surgical and nonsurgical methods of attack are essentially diverse. As noted in this and the previous report, the case of splenectomy was followed by marked improvement; in the case of cholecystectomy, the patient apparently completely recovered.

The severer the affection, the shorter the interval between crises. This is governed by the degree of inflammation, contraction of the ducts and the involvement of the sphincter of Oddi. In the milder cases the duodenal tube introduced after the method of Meltzer-Lyon is frequently a prompt palliative measure; the severe cases may necessitate removal of the gallbladder or spleen. Nonsurgical procedure in three cases has proved eminently satisfactory.

The predisposing causes of the crisis should be taken under consideration, proper diet, regular exercise, fresh air and sunlight, freedom from excitement and sudden changes of temperature, and the prevention of infections, are essential prophylactic measures. Iron, arsenic, and nuclein plus heliotherapy have proved useful therapeutic agents. Asher (10) has submitted experimental evidence to support such therapy. It has been my experience, however, that research problems of this type are best approached in a condition of pathological process rather than in a physiologically normal state. Iron, arsenic, and nuclein were administered by mouth and hypodermically with only fair results. The best results have been secured by the intravenous method. Improvement has been marked during the course of treatment. The spleen and liver have been reduced in size, the blood picture has improved, the crises ameliorated and the intervals extended in the three cases without operation. In the cases where operation was performed the patients responded unusually well.

It is to be inferred from the studies made to date that the close cooperation of the surgeon and internist will prove the solution of the problem presented by chronic hereditary and familial hemolytic jaundice with splenomegaly and hepatomegaly.

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Metal Poisoning by the Administration of Colloidals*

N. ALPERT, M.D.
Baltimore, Md.

Prompted by the recent developments in the use of colloidal metals in the treatment of malignant diseases, many commercial pharmaceutical houses in the United States and abroad have begun to manufacture selenium, copper, gold, manganese, and lead in colloidal form and to distribute literature to practitioners advocating their use in nonoperable and postoperative malignancies. A few cases, benefited by skilful hands, are described to the general practitioner in a way to convince him of the immense therapeutic value of these metals. The physician, impressed, thereupon uses the colloidal metals in his cases of malignancy, without realizing and without being properly informed of their toxic and dangerous effects.

The earliest investigators of the properties of these colloidals were well aware of their toxic nature. Wassermann and Keysser, in 1911, concluded that selenium, to be used as a therapeutic agent, would have to be combined with some other substance that would carry it into the malignant cell itself, so that it could unfold its lethal action locally without injuring the normal tissues. Working with a selenium-eosin compound which had been found very effective in treating animal tumors, Wassermann learned that when the method was tried on human beings, the dose necessary to destroy the tumor also killed the patient. Kausch, working with colloidal silver, obtained good results with human tumors, but also found severe toxic symptoms with death resulting in one patient, so that his method has been abandoned. More recently, W. Blair Bell, of Liverpool, has emphasized that great care must be exercised in the selection of proper patients for treatment with colloidal lead, because of its toxic effects.

*From the Homewood Hospital, Baltimore.

In order to use the metals, certain careful observations must be made as to the determination of the malignancy: the part or organ involved, with or without metastasis; the toxicity of the patient as a result of the malignant condition; the blood chemistry; the renal function; the hemoglobin and blood picture in general. The tolerant test must be established in terms of c. c. per body kilogram. Attention should be paid to the radioactivity of the blood, or, better still, after each injection there should be a checking up of the blood by the nitric acid and iodine test, and the changes in the blood picture noted. The patient's urine should be examined carefully; once a day is not too often.

The two following cases, referred to me, will amply serve as a warning to physicians contemplating for the first time the administration of colloidal metals in their treatment of malignant diseases. They will illustrate what great care must be taken to ascertain the proper dose at the proper time.

CASE I.—The patient, a female, thirty-five years of age, weight before malignant condition 125 pounds, present weight 100 pounds, with nonoperable carcinoma of the cervix, was receiving from her family physician five c. c. colloidal selenium intramuscularly every other day. Although the malignancy improved greatly, after six injections the following symptoms developed: flushed face, dilated pupils, nausea and vomiting, severe headaches, pain in abdomen, cramps, suppression of urine, extreme prostration, sudden fall in blood pressure. Though the body was cold to the touch, the patient complained of great heat and air hunger. The pulse was 40 a minute, irregular, and weak; heart sounds were weak and irregular in rhythm, with hemic murmurs in pulmonary and aortic areas; respiration 30 a minute. The liver was enlarged and the edges were palpable; spleen was palpable; gasus-fremitus in lower intestines.

A catheterized specimen of the urine revealed the following: reaction highly acid; specific gravity 1040; albumin 4 plus; sugar one plus; acetone and diacetic acid present; indican 4 plus; hyalin and epithelial cells numerous; granular cast and pus cells also numerous. Blood count: hemoglobin 45 per cent.; red blood corpuscles 2,000,000; white blood corpuscles 10,000; differential count, neutrophiles 50 per cent.; large and small lymphocytes 18 per cent.; normoblasts and megaloblasts present. Coagulation time seven minutes. Blood chemistry: urea nitrogen 75.0 mg., uric acid 10.05 mg., amino acid nitrogen 20.0 mg. Due to lack of blood, no other blood chemistry could be performed.

Patient was removed to the hospital and the following treatments begun: sodium thiosulphate, one gram intravenously every four hours; 1000 c. c. physiological salt solution with 10 mns. adrenalin by hypodermoclysis; heat applied externally; one half ounce whiskey given, followed by the free use of liquids.

The patient's condition improved, in that toxicity from the colloidals was reduced. When such toxicity disappeared, a tolerant test was established and treatments were resumed with selenium. The blood was checked up and the radioactivity noted. Present blood picture: hemoglobin 68 per cent.; red blood corpuscles 3,200,000; while blood corpuscles 14,000; differential: neutrophiles 85 per cent.; normoblasts occasional. Blood chemistry: urea nitrogen 25.0 mg., uric acid 6.5 mg., amino acid nitrogen 10.0 mg. Since the malignant condition improved, the patient's weight was increased from 100 to 112 pounds. The patient is still under treatment.

However, it is important to note that the great improvement of the patient's condition came only after a normal dose was established by the tolerant test, and a definite rule laid down as to when and how the colloidal metal should be administered.

CASE II.—The patient was a male, forty years of age; former weight 135 pounds, present weight 115 pounds, with carcinoma of the rectum without metastasis. Received from his family physician colloidal copper injected intramuscularly, five c. c. every other day. The following symptoms made their appearance after eight injections: slight burning in the esophagus, pain in abdomen, nausea and vomiting, cramps followed by violent diarrhea and bloody stools, excessive thirst, suppression of urine, prostration, fall in blood pressure. Stools contained rolled flakes of mucus and epithelial débris. Liver was enlarged with palpable edges; a palpable spleen. Severe pain prevented further examination of abdominal wall. The patient breathed laboriously and was air hungry; pulse 50 a minute, irregular and weak; heart sounds irregular and weak; no murmurs.

A catheterized specimen of urine gave the following findings: reaction highly acid; specific gravity 1040; albumin 4 plus; sugar 1 plus; acetone and diacetic acid present; indican 4 plus; hyalin and epithelial cells numerous; granular cast and pus cells also numerous. Blood count: hemoglobin 60 per cent.; red blood corpuscles 3,400,000; white blood corpuscles 14,000; differential count: neutrophiles 65 per cent.; normoblasts and megaloblasts present; coagulation time eight minutes. Blood chemistry: urea nitrogen 80.0 mg., uric acid 15.5 mg., amino acid nitrogen 25.0 mg., cholesterol 290.0 mg., nonprotein nitrogen 75.0 mg.

Patient was removed to the hospital and the following treatments begun: sodium thiosulphate, one gram intravenously every four hours; 1000 c. c. physiological salt solution with ten mns. adrenalin by hypodermoclysis; heat applied externally; caffeine sodiobenzoate seven and a half grains hypodermically every five hours.

Here also the patient's toxic condition improved and the following blood changes found: hemoglobin 75 per cent.; red blood corpuscles 4,200,000; white blood corpuscles 10,000; neutrophiles 80 per cent.; normoblasts occasional. Blood chemistry: urea nitrogen 25.0 mg., uric acid 8.0 mg., amino acid nitrogen 10.0 mg., cholesterol 180.0 mg., nonprotein nitrogen 38.0 mg.

After a normal dose was ascertained by the tolerant test and the colloidal metal used correctly, the patient's malignant condition improved more. The patient is still under treatment; he is gaining weight, the discharge from the rectum is decreasing, and he is free from pain.

CONCLUSIONS

The colloidal metals, although of great value in malignant diseases, must be used with great care and with a constant check on the blood and the kidneys. Where such care is not exercised, we find that to the

misery of a patient suffering from a malignancy has been added the effects of a toxic agent which, instead of accomplishing its original purpose of prolonging the life of the patient, succeeds only in shortening it drastically in more misery.

Let us note again that these conclusions are not what is termed a sudden discovery. Many of those who worked with metals in malignant diseases, such as Wassermann and Keysser, and recently Bell, have emphasized the same danger of using the colloidal metals without a careful regard to the consequences.

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2350 Eutaw Place.

Bothriocephalus Latus*

THEODORE ROSENTHAL, M.D.

New York

Cases of infestation by tapeworms are not at all uncommon in this country. Instances of Bothriocephalus infestation are, however, more unusual and merit discussion not only for their comparative rarity, but because of the toxic phenomena which frequently accompany them, and which may simulate other conditions.

Thus, Savitz (1) describes a case in which gastric symptoms and secondary anemia were prominent features, and malignancy of the gastrointestinal tract was feared, and only after several negative röntgenographic examinations was parasitic disease suspected. Again Grünmandel (2) reports an instance of a pernicious type of anemia in a child with hemolysis following a blood transfusion. Repeated small transfusions from a different donor were employed, and then vermifuges given with prompt recovery.

Up to 1916 Singer (3) was able to find only thirty cases of Bothriocephalus infestation reported in this country; Haden (4) collected twelve more instances in 1923, and since that time Riley (5) and Anderson (6) have published additional reports.

Most of the cases described have occurred in immigrants, but Calvin (7) and Wallace and Grant (8) report several instances of native born infection. These cases occurred in the Great Lakes region, in children of immigrants who partook of raw fish. According to Stiles it is probable that immigrants have infected the fish in these regions and that there exist in this country numerous foci of infection.

A critical analysis of the cases previously reported fails to disclose any unusual signs and symptoms, other than those classically described. Not all the patients presented an anemia; Haden concludes that in about ten per cent. of those harboring the parasite at some time anemia develops.

Eosinophilia is not a constant finding. Calvin, in reviewing all the cases of tapeworm infection in the Cook County Hospital from 1911 to 1921, stated that in seventeen of thirty-three cases in which blood counts had been recorded, eosinophilia was present.

Various theories have been entertained as to the cause of the anemia. It was thought that the lipoids of the worm might be a hemolytic agent. Attempts to reproduce an anemia with extracts of normal worm failed. Faust and Tallquist (9) observed that worms recovered from patients with anemia show as a rule great loss of substance, with little change in lipoid content. They advanced the theory that through the death of the parasite in the intestinal canal of the host, hemolytic substances were formed and absorbed, bringing about the characteristic action on the blood and bonemarrow.

Brumpt (10) agrees with the authors quoted above but noted that in Switzerland anemia is rare, and common in the Baltic region and Russia, although the disease is endemic in both areas. No explanation is advanced for this apparent discrepancy.

Oleoresin of aspidium was the drug employed by the majority of the authors; this was given after several days of fluid diet and following saline cathartics. One author (Savitz) obtained a successful result with thymol.

Jacobaeus (11) found that the proportion of cases in which the head of the tapeworm was evacuated was considerably increated by using veronal and phenacetin in conjunction with male fern medication. Six grains each of veronal and phenacetin were given on three evenings in succession, before administration of the vermifuge. This also seemed to reduce the tendency to vomit. Schneider (12) obtained excellent results by using small amounts of oleoresin of aspidium introduced directly into the duodenum by means of the duodenal tube.

In none of the reported cases was there any evidence of inquiry into the blood findings and other laboratory data which might lead to some further knowledge of the cause and course of the blood changes which occur in this type of infestation.

It was for this reason, in addition to the rarity of these cases, that this report has been prepared.

Case.—Mrs. L. S., aged fifty-four, a housewife. The patient's family history was irrelevant. She was born in Austria and had lived in the United States for twelve years. Thirteen years ago she first noticed a portion of a worm in her stools. She sought medical advice and medication was given without success. One year ago and two weeks prior to admission she again passed segments of worms. The patient felt well and suffered no loss of appetite. Occasionally she had abdominal pains and a feeling of hunger, but this soon passed off.

*From the Lebanon Hospital, New York City, service of Dr. William Weinberger.

She had had asthma for the past five years, typhus and influenza twenty years ago. The respiratory organs were negative, also the cardiac and gastrointestinal. Her appetite was always good, bowels regular, and no jaundice at any time. The genitourinary organs were negative. She had been married twenty-six years, had had three children, who are alive and well, and one miscarriage. The menopause occurred six years ago.

The patient had always been fond of fish, and had eaten it all her life. She said that about twenty-three years ago while preparing some fish she found a tapeworm in one of them. She had never eaten raw fish, it had always been cooked.

Physical examination revealed a short, stout, white female, aged fifty-four, not looking ill. Her heart was slightly enlarged to left, and there was a slight systolic murmur at the apex. The lungs showed fairly good resonance; expiration prolonged; no râles. Abdomen showed obesity, no masses or viscera palpable. No edema in the extremities. The patient's weight was 145 pounds. Blood pressure, 132/80.

Blood counts on two occasions were as follows:

Hemoglobin (Dare)	52 per cent.	60 per cent.
Red blood cells	3,500,000	4,000,000
White blood cells	5,400	8,400
Polymorph. leucocytes	74 per cent.	72 per cent.
Lymphocytes	22 per cent.	20 per cent.
Mononuclears	2 per cent.	6 per cent.
Eosinophiles	2 per cent.	2 per cent.
Platelets	200,000	

The urine was straw colored, clear, specific gravity 1,022, no albumin, sugar or casts; a trace of urobilin was present. Phenolsulphonephthalein test: first hour, fifty per cent.; second hour, fifteen per cent.; total two hours, sixty-five per cent.

Stools were semisolid, brown. Repeated examinations showed moderate numbers of typical Bothriocephalus latus ova. No blood, either gross or occult, could be demonstrated. Pancreatic ferments were present, and a slight trace of hydrobilirubin. Total fat 0.91 per cent. The blood Wassermann was negative.

BLOOD CHEMISTRY

Nonprotein nitrogen	32 mgms. per 100 cc.
Urea nitrogen	15 " " " "
Uric acid	2.2 " " " "
Sugar	141 " " " "
Carbon dioxide combining power of plasma	44 vols. per cent.
Cholesterol	192 mgms. per 100 cc.
Icteric index	4.1
Bilirubin dilution	1-35.

Stomach contents: Fractional gastric extraction revealed a normal curve of acidity, ranging from 22 free and 34 total acidity to a maximum of 24 free and 88 total acidity. Microscopic examination negative.

Duodenal contents: Obtained by Lyons drainage, revealed some débris. No ova were found. A culture of the contents showed the presence of Staphylococcus aureus (probably a contamination).

Red blood cell fragility was found to be normal. Hemolysis began at 0.44 per cent. and was complete at 0.36 per cent. Surface tension of blood serum 141.6 grams (normal). Semidentation rate of erythrocytes—32 minutes to mark iii; (normal in two hours).

After observing the patient for a few days she was prepared for the treatment by having a liquid diet for two days. On the day before receiving the anthelmintic, she was given licorice powder in the morning and an ounce of magnesium sulphate at night. The following morning after drinking a cup of black coffee the patient took eight capsules, each containing fifteen minims of oleoresin of aspidium. These were taken within a half hour. Thirty minutes later she was given five grains of calomel and after an equal length of time she again took one ounce of magnesium sulphate. An enema was given soon after, and the patient expelled a worm eighteen feet long.

On gross examination it was seen to be a typical specimen of the Bothriocephalus latus with flat segments perhaps two centimetres broad at its widest point and diminishing in the neck region to a breadth of no more than one millimetre. Close search failed to reveal the head and subsequent enemas given also proved fruitless, but the presence of so much of the neck region made us confident that the head had also been expelled.

After the worm had been obtained, conjectures were made as to the possibility of visualizing it *in vivo* inasmuch as we had been employing sodium-tetraiodophenolphthalein in cholecystography. Accordingly different portions of the worm were immersed in a ten per cent. solution of the dye for thirty minutes, six hours, and twenty-four hours respectively, and then washed free of all dye and exposed to the x ray. Fine shadows were obtained but these results did not warrant proceeding any further along these lines.

SUMMARY

A case of Bothriocephalus infestation is presented, with a report of the laboratory findings and a review of the literature. Nothing abnormal was encountered in the investigation. Absence of anemia, eosinophilia, and marked symptoms in this particular instance evidently indicate that the worm had not died in the host, with the resulting absorption of toxic products. The appearance of the worm also tended to support this view.

The icteric index, performed as described by Bernheim (13), was well below the normal maximal figure. The sedimentation rate of the erythrocytes of the patient, described, among others, by Alexander (14) and Zwecker and Goodell (15), and which as a rule indicates the presence of acute inflammation, was found to be normal.

Blood morphology and red cell fragility were also normal. The surface tension of the blood serum, determined through the courtesy of Dr. H. L. Frosch, was found to be normal, although as yet there is no literature available on this physical property of the blood.

In this instance of tapeworm infection, then, no indication of faulty function of the hematopoietic system is seen. This patient, however, presented practically no clinical signs other than the mere presence of the worm in the stool.

It is hoped that when well marked cases present themselves, these findings will serve as a point of departure for future investigations, which will help to shed more light on the blood changes occurring in this disease.

141 WEST 120TH STREET.

The author's references will appear in his reprints.

The Chemical Aspects of Life and Disease*

ELLICE McDONALD, M.D.
Philadelphia

(*Concluded from page* 461)

This was called the smooth muscle reaction (the involuntary muscle is also called smooth muscle) because it was the reaction of the involuntary muscle to the varying influence of the two sides of the vegetative nervous system.

An interesting fact was then disclosed: when the vagus was preponderant, the condition of the blood was more acid (increased hydrogen ion concentration) and when the sympathetic division was preponderant, the blood was more alkaline (decreased hydrogen ion concentration, increased p.H.). This meant that nerve action was associated with and influenced by chemical conditions of the body. This fact was so surprising that it was investigated at length, and finally it was found that the degree of acidity or alkalinity of the blood (hydrogen ion concentration) could be more or less exactly determined by the condition of the involuntary muscle, particularly in the intestine, as shown by x rays under certain specific conditions of the test. In order that there be no mistake due to scientific enthusiasm or uncontrolled deduction, an investigator, skilled in mathematical analysis, was asked to make a test of the correctness of our deductions. It was found that, by means of x ray pictures, with all details concealed, except the image of the intestinal muscle, it was possible to predict the hydrogen ion concentration of the blood (degree of acidity or alkalinity) with a small margin of error. So a correlation table was plotted (which showed an extremely small factor of error) not to tell us what we believed before, but to remove the factor of human fallibility and proneness to error and to give us an idea of how far right we were and how far wrong.

The vegetative nervous system and the degree of acidity or alkalinity of the blood then worked together or could be reciprocally correlated (mutually affecting and affected). It was also found, generally speaking, that, when the blood was made more acid, the vagus division became preponderant and, when the blood was made more alkaline, the sympathetic division became preponderant. Confirmation was found in the work of Daly and Clark, and Drury and Cowles, who found that when the liquid around the heart was acid, the heart beat slower (vagus action) and when the liquid was alkaline, the heart beat faster (sympathetic action).

The action of the four important elements showed that there was the same antagonism between sodium and potassium upon the one hand and calcium and magnesium upon the other, as was found by Murkerjee in his test tube experiments upon negatively charged suspensoids. The salts of the first two increased the action of the sympathetic side and the salts of the last two increased vagus action. Calcium and magnesium salts do not make the blood alkaline, but make it acid, as has been proved by the work of Blackfan, Gamble Hamilton, ourselves and others. The reason of this is not at present clear; but, in biological experiments with one celled organisms, such as the star fish egg, it has been consistently proved that the salts of sodium and potassium increase the permeability of the membrane (or cell wall) and increase the conductivity, while the calcium and magnesium salts decrease the permeability of the outer boundary and decrease conductivity.

The reason of this may be in the fact that sodium and potassium have one electron in the outer ring and calcium and magnesium have two outer electrons. This difference of action may have to do with the same processes as produce the Compton-Einstein light effect, for when a particle of light collides with a free electron (as in sodium and potassium) the light waves are changed from a higher frequency to a lower—from blue towards red—by impact with the free electron. In other words, with the impinging of the "light quant" (or light unit) on a free electron, it necessarily transfers some of its energy to it, but the "light quant" recoils from the impact with a lesser energy and to a lower frequency. But, when there is no free electron, the mass of the atom permits the momentum equation to be satisfied without forbidding the complete transfer of the energy as it does when there is only one free electron. Then again, sodium and potassium are acted upon by the whole spectrum of light and are higher in the order of conductivity and calcium and magnesium are acted upon by the ultraviolet part of the spectrum. As all energy comes from the sun, this action of the ultraviolet light in mobilizing calcium may be most important.

In the study of man and his processes, it is difficult to get the healthy ones to stay put long enough to study them properly. In the army, during the late war, we had control of them, but we were too busy about another job. However, when he is sick and in a hospital, it is possible to keep him long enough to study him more or less continuously to his benefit and not to his hurt. So most of our observations upon the processes of human life have been in the deviations from normal which are called disease and, from this it is possible not only to gain knowledge about the deviations, but also of the manner of return to normal and of normality itself. The result of these researches may be shown in the following scheme which has to do with the relation of the force (energy), the apparatus (protoplasm) and the controlling influence (the vagus sympathetic balance of the vegetative nervous system), and only secondarily with the deviations from balance of normality, called disease. (See table on page 539.)

From this table it may be seen that an even balance of the vegetative nervous system is necessary to the proper maintenance of the equilibrium of the chemical processes of the body which we call health. "He who has health has hope, and he who has hope has everything." Disease deviates the balance to one or other side and deviation of balance to one or other

*Address before the American Chemical Society, April 15, 1926.

side predisposes to certain diseases. By this is not meant that this is the cause of disease (it probably is of many nonbacterial diseases), but that it produces a receptive condition for disease and probably for the bacterial infections. Pneumonia, for example, is prevalent in winter when the ultraviolet content of light is low, the green vegetables have lost their chlorophyll (a vagus stimulant) and the blood content is low in anions (the acid part of salts, such as iodine), so that the incidence of pneumonia may, indeed, be due to a sympathetic preponderance and a receptive condition of the lung cells for the pneumococcus which is almost always in our throats.

Disease is usually a terminal result from predisease conditions with transient or recoverable changes (transitory cell changes) to culminate in a condition of permanent symptoms (permanent cell changes) without recovery, or in disease which is an irreversible reaction (or the balance is more or less perma-

CAUSE	METABOLISM	MECHANISM	EXPRESSION
Energy from orientation and configuration of electrons in atoms and molecules.		Coalescence of colloid bi- and trivalent cations and anions produce vagus effects.	
		Less cell conductivity	
		Less potential difference	
		Anodal	
		Negative	
		Increased smooth muscle reaction	
Inorganic salts		Lower p.H (higher H-ion concentration in blood)	Most infections
		Less permeable cell membrane	Colitis
		Vagus	Typhoid
		Plasma less alkaline	Diabetes
			Neurasthenia
			Pertussis
Lipoid solvents		Oxidation	
			HEALTH
Hydrogen ion concentration		Reduction	Psychasthenia
		Plasma more alkaline	Deficiency disorders
		Sympathetic	Tetany
		More permeable cell membrane	Rickets
Oxidation-reduction poise		Higher p.H (lower H-ion concentration in blood)	Syphilis
		Decreased smooth muscle reaction	Eclampsia
		Positive	Respiratory infections (tuberculosis) (pneumonia)
		Cathodal	
		Greater potential difference	Gastric ulcer
		Greater cell conductivity	Essential hypertension
		Univalent cations produce sympathetic effect	Edema
		Dispersion of colloid	

nently upset until the man gets well or dies). A man does not die because he gets disease: he gets a fatal disease because he is dying. All diseases are more or less terminal (like age, which is essentially a disease) and differ only in degree in that respect. The symptoms of disease are but the expression of a foregoing condition and the result of altered cell function for a varying period of time before sufficient accumulated deviation results in disease.

In consideration of diseases it is interesting to know that most bacteria which produce infection are negatively charged, while the antibodies which neutralize infection are positively charged. Antibodies are apparently catalysts of the second order and it may be that they are of the nature of protective colloids. The quality of charge is of importance as it has been found in the four types of pneumococcus that virulence decreased with decreasing charge.

Apparently reduction of charge is one method of recovery from infection. In the typhoid bacillus, for example, the negative charge is approximately —15 mv. If this is reduced the cohesive forces overcome the repulsive force of the charge and the bacilli fall together and agglutinate, so that the progress of the disease is dependent upon the reduction of the negative charge through the body forces.

Positively charged substances such as ferric hydroxide, manganous chloride and sodium recinoleate increase the effect of antitoxins, provided these are in excess, apparently by increasing their positive charge. The unsatisfied bond of sodium recinoleate has a strange and powerful action. Of course, charge is only a product of chemical changes. All the processes of infection and immunity can be explained upon the basis of colloid chemistry. There is great hope that the control of infection may come through the production of chemical antibodies and these will in all probability be positively charged compounds of the univalent elements.

In certain acid vagus types of disease, benefit is derived from treatment by the injections of positive colloids of the type of ferric hydroxide colloid as in asthma. Again, in the alkaline sympathetic types of disease, the negatively charged substances are of use. The ferric hydroxide colloid seems to act as a protective colloid so that the cell acquires the isoelectric point of the protective colloid and then the positively charged antibody is effective.

As three of the fundamental principles of man's life have been considered, it remains to consider the influence of psychic processes. In the study of emotion we have found that this also divides itself into two phases. Emotion of the type of despair or fear is characterized by activity of the smooth muscle of a vagus or active type, while anger or fighting fear is marked by sympathetic action shown in the immobility of the smooth muscle of the stomach. This last is the type of emotion which Cannon produced in cats when he showed there was an increase of adrenalin, a sympathetic stimulant in the blood.

Emotion thus has a chemical influence by its production and the emotion of either type is more easily felt according to the nearness of the chemical balance of the system. Fear of the despairing character is more readily felt by the acid vagus type, while anger or fighting fear is more readily felt by the alkaline sympathetic, high blood pressure type.

Emotions, then, must be considered as falling into two classes; the vagus effect producing and the sympathetic effect producing and in these effects they have a decided influence upon body processes and body chemical metabolism (and all metabolism is chemical). Such familiar phrases as "the shock upset my digestion" come to mind. One of our most beautiful x ray pictures is of a temperamental young woman about to faint, and shows the stomach contracted into a knot to such a degree as to be almost impossible of belief, so marked is the vagus effect upon the contraction of the muscle.

This has also been correlated in modes of thought. There is in psychology a very definite type of thinking marked by different levels of consciousness. This is called the hysterical thinking of the type of Janet, —the *somnambule* or hypnotizable subject. Our collaborator, Dr. Elton Mayo, has found that patients of this hysteria type are always upon the alkaline

sympathetic side. This led to the study of the opposed type of obsessional thinking person with the overregulated life, full of fears and worries and he was found to be of the acid, vagus type. These two types are quite definite examples of the opposed deviation from normal thinking, and there are all possible gradations. This discovery has promise of far reaching results, because, for the first time, modes of thought, or manner of mental processes have been correlated qualitatively with chemical processes and hope of future discovery is bright in this direction.

The two branches of nervous force, voluntary and involuntary, have thus been correlated more or less with chemical processes:—the vegetative nervous system with p.H. and smooth muscle effects and obsessional and hysterical thinking with p.H. and the vegetative nervous system. The vagus, acid type has exaggeration of obsessional thinking more readily than the obsessional sympathetic alkaline type, and more readily feels anger, worry and irritation. While the hysterical alkaline, sympathetic type more readily feels anger and thinking upon different levels of consciousness. So modes of thought and tendency to certain emotions can be correlated with chemical changes in the human body.

In the production of these changes in the human body, the important substance is the protein of the colloid cell. Fat and carbohydrate are more or less dead tissue and do not enter into the control of the chemical balance as shown, for example, in immunological reactions. Protein, however, establishes the differentiation between the different species and different individuals as proteins of different species show readily recognizable immunological differences as in the precipitin test and these differences in protein are apparently dependent upon chemical composition.

Proteins are complexes of amino acids of which seventeen go into the formation of protein and Abderhalden has calculated that, if all are in protein, there are 2420 different compounds without calculating the enormously greater number which might be made by varying the proportions in a different protein. An interesting suggestion has recently been made by Troensegaard that proteins are not made up of amino acids, but that the amino acids are decomposition products and that protein is built largely of pyrrole, pyrrolidine and pyridine rings condensed into systems of 2, 3 or more and containing O as OH. This is the more interesting as specific differences seem to depend upon the aromatic radicals and protein can be altered by introducing such radicals as iodin, NO_2 and N=N into the protein molecule, where they are known to enter specifically into the benzene ring of the aromatic amino acids. These proteins, when so changed, as with iodine, produce immunological reactions which are specific for the changed protein, but are also specific for all iodized proteins. Iodized protein precipitin is not specific for proteins changed by nitrogen dioxide or other radicals. Furthermore, if radicals are introduced which do not possess the benzene ring, species specificity is not affected, although the resulting proteins exhibit specificity towards themselves. This seems to indicate that the aromatic radicals may be of importance in determining biological reactions. The important factor seems to be the relative location of the aromatic nucleus of the acid and diazo group. The specific behavior of protein is, therefore, determined by the chemical structure of relatively small portions of the large protein molecule. Peck also believes that electric charges on the amphoteric colloidal protein (antigen) and antibody and also their surface configuration and surface forces all influence the reactions of protein.

The specific behavior of protein is thus determined by chemical structure, but the mechanism of colloid forces must also be considered as to adsorption, change of sign and spatial arrangement.

The dependence of biological specificity upon proteins raises the question as to how proteins became specific. There cannot have been any changes in the character of protein for a vast period of time. The earliest known forms of life existing show that their chemical composition is essentially the same as that of their living descendants. The oldest proteins available for such purposes are those of the mummy and the mammoth. Human proteins of five thousand years ago have no evolutionary alteration from human proteins of the present day. The blood of the Siberian mammoth of twenty-five thousand years ago gives immunological reactions which indicate its relation to the modern elephant.

The selection of the seventeen amino acids must have been made at an immensely remote period for the earliest records of life do not show us organisms which have any noteworthy difference in chemical composition. Nor do we find any amino acids which do not exist in plants. Bacteria and plants can synthesize protein from extremely simple inorganic salts and the chemical structure of unicellular organism is equally complex with the cells of man. Some questions for chemists are "why do the evolved proteins possess so great a variety of amino acids, and why is it that none of the other related amino acids, other than the seventeen used, occur? Why is it that proteins may contain amino acids with two, three, five and six carbon atoms, but never with four carbon atoms?"

The human protein is, therefore, the important deciding factor, and in protein itself the important part seems to be the aromatic radical. There may be then said that there is a protein constant for each particular individual and the processes of life written into a formula, incomplete, because our knowledge of life is incomplete, but capable of revision and addition with increasing knowledge.

$$K = \frac{BHCO_3 \times OH \times Sr \times Es}{H_2CO_3 \times H \times So \times Ev}$$

Let K = The protein constant of protoplasm (or "gift")
$BHCO_3$ = Fixed alkali of univalent cations
H_2CO_3 = Fixed acid of bivalent and trivalent cations and all anions
OH = Free hydroxyl ions
H = Free hydrogen ions
Sr = The reduction part of the oxidation reduction poise in the sense of Mansfield Clark
So = The oxidation part of the oxidation reduction poise
Es = Sympathetic effect producing emotions
Ev = Vagus effect producing emotions.

This formula embodies the sum of environmental influences of life, affecting the original protoplasm or "gift" of our first single cell from which we de-

veloped after its fertilization. So that included in the factors following the constant, K, are all the influences which modify it through life and so alter it that, when it reproduces itself, the quality of protein is once more renewed into a new K.

Life is an equilibrium as is shown in the constant temperature of the human body, which is a product of chemical forces, as are many other manifestations of the human balance. In the human tribe, then, is a different quality of balance due to different protein constant and different environmental influence. The darkeyed, largepupiled Mediterranean races of the south of France, Italy and Spain are inclined to sympathetic preponderance. One example of this is the number of subjects among them capable of being hypnotized. Hypnotic suggestion, according to our researches, bears a very definite relation to sympathetic preponderance. So that these people react differently to emotion to the fair haired, blue eyed Nordics of Germany with their vagus preponderance. They differ not only in their protein constant, but also in their environmental influences (for example, the greater meat consumption of the German). How then can they be expected to understand each other when they react differently to emotion and in mental processes?

The vagus sympathetic balance implies balance or proportionate association of salts, particularly sodium, potassium, calcium and magnesium with proper hydrogen ion concentration and the production of proper bioelectric variation in the cell and liquid phase (the blood and tissue juices). Of course, life is not rigid, but mobile so that this balance fluctuates with the daily occurrences of life within moderate limits, for example, in the alkaline tide after food which temporarily neutralizes the acid of the stomach. Still it is probable that most of us have a predilection or tendency toward the one side or the other, toward the vagus preponderant or the sympathetic preponderant or we would not grow old, and this has a great deal to do with determining character and temperament.

Feeling and emotion, which, after all, determine our actions and course in life much more than intellectual reason, must play a great part in our relations with our fellows. If the vagus preponderant is more prone to worry, fear and the anxieties, it will be hard for the sympathetic preponderant whose reactions to these same stimuli are different, to understand him, except by an effort of conscious willed analysis, but not naturally and automatically.

The basis of man's life is then dependent upon his special structure, the quality of his material and the atomic forces which activate them. Also must be considered the mechanism of the control of the relations of these factors in the unconscious nerve control of his protoplasmic processes. The striking fact in the study of man's processes is the elaborate and extreme symmetry and arrangement, balance and counterbalance, as there is in all nature. No thinking man can ponder on the processes and arrangement of life and living things without feeling that these are too precise, too arranged, too planned to be without direction and that when scientists endeavor to explain these processes and their evolution, they do not detract from faith, but make the meaning of the Maker more increasingly manifest.

Twentieth and Chestnut Streets.

Congenital Genu Recurvatum*

With Report of a Case

SAMUEL W. BOORSTEIN, M.D., F.A.C.S.
New York

While rare congenital skeletal deformities are interesting as is a rare case of any disease, these cases have perhaps additional importance for the general practitioner. In college and in the general textbooks all these deformities are little more than barely mentioned. Their etiology and treatment are certainly neglected. The student invariably remembers that they are incurable. During his busy practice he seldom reads medical periodicals devoted to one subject exclusively and thus misses the latest treatment for these rare cases. Even when an article on the subject is published in the general medical journal he is quite apt to omit it from his reading. The result is that the physician remains with the impression that they are incurable. When he is so unfortunate as to find that a child delivered by him has a rare congenital deformity, especially a skeletal, he sympathizes with the parents and in as soft a tone as possible informs them that the condition is incurable. The parents console themselves as best as they can but when the child is a little older the mother is usually advised by neighbors of the proper institution to which the child is to be taken. There the mother is frequently told that the child can be improved or even cured. The parents of course at once put the blame for the delay to their family physician. Quite naturally such an occurrence does not add to the good repute of the physician. It is therefore advisable for the general practitioner to see these congenital deformities once in a while and thus keep in touch with their latest treatment. They might perhaps establish a rule to have the cases seen by a consultant within a few days after birth and to let him decide whether the condition is curable or not. Such a procedure will save the family physician hours of anxiety, and the patient months of disability.

The consideration of the above prompted me to report this rare case especially when I have the good fortune to be able to demonstrate how it has been put on the road towards a perfect cure.

The case was on the service of Dr. H. J. Epstein, the Visiting Obstetrician of Bronx Hospital, who showed me the child when only three days old.

*From the obstetric service of Bronx Hospital. Presented before the Clinical Society of the Bronx Hospital Dispensary on December 14, 1925.

Genu recurvatum is an anterior displacement of the tibia. The knee is bent somewhat backward, or in other words the leg is hyperextended on the thigh. This deformity is so rare as to receive but little mention in the standard texts. Jones and Lovett in their latest book do not speak of this deformity at all. Albee (1) just mentions the occurrence. Whitman (4) and Steindler (3) do give more space to that

FIG. 1.—September 19, 1925, when child was six days old (before treatments were instituted). Note the marked recurvatum of right knee. (This photograph was unfortunately taken by an amateur photographer and thus the shading is not proper but it brings out the deformity clear enough.)

deformity. The condition is often spoken of as anterior dislocation but this term should be limited to the more extreme cases.

It is considered to be due to abnormal and fixed position in the uterus. It is therefore mechanical in nature. "In some cases it may be due to aplasia of the quadriceps with secondary bone changes" Bazert (2). The patella is usually rudimentary.

CASE.—M. S. Female; first child; born of healthy parents. Labor, vertex, no forceps.

Child was seen by me on September 16, 1925, when only three days old. Examination showed a distinct recurved or hyperextended right knee. No marked contraction of the quadriceps tendon as the leg could be brought down to a straight angle but could not be flexed. There was a marked groove above the patella. One could feel the patella (Fig. 1).

The x ray showed no abnormality but of course one could not make a reliable interpretation of a radiogram at such an age.

A small Thomas Jones splint with the knee in straight position and traction straps was applied. In two weeks the splint was flexed slightly at the knee. The angle of flexion was gradually increased so that at the age of six weeks the leg was flexed at an acute angle. Massage was then instituted three times a week removing the brace at each treatment. When child was two months old the brace was taken off for one hour twice a day. The time was gradually increased. Now at the age of three months it is off about four hours daily. I hope to be able to dispense entirely with the brace in another month.

The physical examination of the patient at present shows no defect in the knee. Child moves it as freely as the other and does not hyperextend it. Kicks freely. Has no groove above the patella. Good power of the quadriceps (Fig. 2 and 3). Naturally the child will have to be watched when it commences to walk in order to see that it places the feet normally. It is my opinion that it will.

It may also interest you to know how easy it was to take care of the child. The mother (who fortunately happened to be intelligent) was shown the function of the brace and also where pressure is likely to occur (at the ring) and instructed her how to remove the felt padding and recover the ring. After the first two weeks the mother knew how to take off the brace, bathe the child while the knee was guarded, and then to reapply the brace. Thus the difficulty of keeping the child clean was easily overcome.

CONCLUSIONS

1. Congenital genu recurvatum is amenable to treatment.
2. The treatment should be commenced immediately after birth.
3. A small Thomas Jones splint can be used to keep the limb in the proper position.

FIG. 2.—December 21, 1925. When child was three and one half months old. Note the good condition of the knee..

FIG. 3.—December 21, 1925. See the ability to flex the knee freely.

4. Massage and exercises can be used easily with this brace.

I wish to thank Dr. H. J. Epstein, the Visiting Obstetrician of Bronx Hospital, for his kindness in referring the case so early and permitting me to make these observations.

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529 COURTLANDT AVENUE.

Tissue Fibrinogen by Mouth in the Treatment of Acute Hemorrhage in Hemophilia*

LLOYD B. DICKEY, M.D.
San Francisco, California

While a physician is not often called upon to arrest the hemorrhages of a hemophiliac, a very discouraging problem may be offered when such a patient presents himself. The many and various types of therapeutic measures adopted in these cases is evidence of this fact. Mills (1) has repeatedly advocated the use of tissue fibrinogen to control the bleeding in hemophilia as well as in other types of hemorrhage, and lays claim to attaining marked success with this substance, although he has submitted no case reports. In two cases on our service, in one of which most of the conventional methods had failed to check the hemorrhage, we used tissue fibrinogen by mouth, with good results.

CASE REPORTS

Case I.—A. M., an infant one year of age, of Scotch ancestry, was circumcised on May 29, 1925. Almost immediately hemorrhages under the skin occurred around the area of incision. Bleeding, although slight, was almost continuous. Every diaper removed was bloodstained. Within a few days after operation numerous subcutaneous hemorrhages were noticed on various parts of the body. Compresses were used to the wound, calcium lactate, and later, calcium chloride were given by mouth. The case was referred to the Division of Pediatrics at this time. Horse serum was given subcutaneously and intramuscularly, with no effect, either on the coagulation time, or on the hemorrhages. Transfusions were given intraperitoneally, using both the mother's and a male cousin's blood. Blood from both the mother and the cousin were given intramuscularly. The patient started to bleed profusely from the urethra, and the transfusions were continued almost daily. A cystitis developed and large quantities of sodium citrate were given by mouth. None of these measures seemingly had the slightest effect on the bleeding.

At this time the fact was obtained from the parents that for the last six months the infant had bruised very easily, and that every bruise was followed by a small lump under the skin, which later became discolored. They stated that even the mere shaking of the infant at times caused these bruises to appear. All of the evidence obtainable pointed to this being a true case of hemophilia. No family history of the condition was obtained. The only other male member of the family known, who would be in the possible line of descent, was one brother of the mother, and he had given no history as a bleeder. In addition to the history of what were probably numerous subcutaneous hemorrhages continuing over a considerable length of time, the continuous bleeding from slight wounds, and from the urethra, the following tests seemed to confirm a diagnosis of hemophilia. There was a markedly prolonged coagulation time; the bleeding time was always normal; the tourniquet test was negative; the platelet count was normal; all of the clots passed from the urethra and those of the blood drawn from the heel were retractile in character.

On July 8th the hemoglobin was thirty per cent Sahli. The child had bled almost continuously for six weeks, during which time various efforts had been made to control the bleeding. He was probably kept alive only by the repeated transfusions. At this time tissue fibrinogen was given by mouth, in ice water, on an empty stomach. The dose was fractional, 1.5 cc. of fibrogen, (0.0075 Gm. of purified tissue fibrinogen) being given at two hour intervals for 4 doses. The coagulation time up to this period had varied between twenty minutes and over forty-five minutes. At the time the first dose of fibrogen was given the clotting time was over fifteen minutes. Thirty minutes after the first dose it was eight minutes, and thirty minutes after the third dose it was five minutes, which was lower than it had been at any time. No more clots were passed from the urethra. The amount of the bleeding was at once greatly diminished, and ceased altogether the next day. The coagulation time remained lowered all the next day, but a week later was back to thirty-five minutes. No further bleeding from the urethra occurred. One week after the first dose the same amount was again given in the fractional doses. At this time the coagulation time was over forty-five minutes, there was no bleeding, and the fibrogen had seemingly no effect on the time of coagulation.

Case II.—A. B., a boy, aged twelve. At the age of nine days this patient had been circumcised, bled very profusely, and was diagnosed at this time as a bleeder. Since infancy he had bled easily and long, at every slight cut, and every bump caused a hemorrhage under the skin. At two years of age he had a hemorrhage into his right ankle, and since then other hemorrhages frequently at the slightest injury to his joints. These involved both ankles, both knees, both elbows, and occasionally the finger joints.

At the time of entrance to the hospital in June 1926, he was suffering from hemorrhages into the left knee and elbow, which had started ten days previously. He was complaining of very severe pain in these joints.

There was marked pallor of skin and mucosæ. The right elbow joint was deformed, motion was limited, and it was somewhat tender. The left elbow joint was swollen and tender, and fluid was present. The right knee was swollen and tender, with ecchymotic areas over the patella. The left knee was very much swollen, very tender, and contained fluid. Röntgenograms showed areas of bone destruction near the articular surfaces of both humeral condyles, under the trochlear surface of the ulna, and in the articular surface of the left patella.

The hemoglobin was fifty per cent Sahli, with 2,750,000 red blood cells; white blood cells were 9,600 with a normal differential; platelets numbered

*From the Division of Pediatrics, Stanford Medical School.

381,000; the bleeding time was one and one half minutes and coagulation time twenty-five minutes; the clot was retractile in character, and the tourniquet test was negative.

Sedatives and hot compresses were given the first three days. The circumference of the joints became slightly reduced and pain was somewhat alleviated. On the fourth day the size of the left elbow began to increase, and was very painful. The coagulation time was twenty-five minutes at the time tissue fibrinogen was administered. It was given in doses of 3 c.c. of fibrogen, (0.015 Gm.) in ice water, on an empty stomach. At five and ten minutes no change in the coagulation time was found; twelve minutes after giving, the clotting time was thirteen minutes; after fifteen minutes the time was ten minutes; twenty-five minutes after administering, a firm retractile clot formed six minutes after withdrawing the blood.

No further swelling of the joints occurred. By the next day pain had ceased, and tenderness gradually subsided. Four days later, with no hemorrhages occurring, the same dose was given under otherwise the same conditions. The coagulation time was now over forty-five minutes, and no apparent effect was obtained by giving the fibrinogen tissue extract.

CONCLUSIONS

1. In two cases of hemophilia tissue fibrinogen, given by mouth, in ice water, on an empty stomach, exerted a very decided effect on the bleeding coincident with a marked reduction in coagulation time of the blood. In these cases the bleeding was checked for the period of observation, although the coagulation time was reduced for only a few days at the most.

2. Since the bleeding in hemophilia is difficult to control by other methods the use of tissue fibrinogen by mouth deserves further trial.

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The Principles in the Treatment of Cancer*

RICHARD J. BEHAN, M.D.
Pittsburgh, Pa.

(*Continued from page* 471)

That such an operation is without danger cannot be said. Deaths do occur and it is just the class of patients in whom the benefits are the greatest that the mortality is the highest. Its risks are counterbalanced by the relief it brings to the patient and the enhancement of his chance for cure. As I stated before, in cancer of the uterus, limitation of the blood supply is of value. Both internal iliac arteries are tied a short distance from their point of origin. I have never noticed any ill effects from such ligation. There is an immediate lessening of bleeding and it may entirely cease. Hysterectomy in such patients is, however, not made entirely bloodless. Bleeding is reduced to such a degree that extensive operative manipulation is rendered safer. In cancer of the rectum, ligation of the inferior mesenteric artery may be undertaken.

The supposition that lessening of the blood supply is advantageous in cancer therapy is supported by the opinion of many investigators.

Carter Wood evidently believes that good blood supply is essential to the rapid proliferation of cancer cells, for he says in speaking of the immobilization of the cancer cells in scar tissue that—"the dense scar tissue immobilizes the cancer cells and the diminution in blood supply prevents their rapid growth." He further states—"when the tissues are excised and a large amount of blood is furnished the tissues, as healing takes place, they are then capable of renewed growth." He also attributes the death of cancer cells in a square bounded by radium needles to be due to thrombosis of the vessels with an insufficient blood supply, so that they are destroyed by a dose of radium insufficient to destroy other cancer cells, not so ill nourished (2). Knox, discussing epithelioma of varicose ulcers, states that in this lesion, where irritation has been present for a number of years, cancer does not develop. Here the blood supply is extremely bad. Knox (3) further states, "if the blood supply is adequate, a carcinoma will grow faster when once formed." Lumsden (4) states that rat sarcoma of the foot can be made to disappear by repeated injections of antiserum, into and around the tumor, with *temporary stoppage of circulation in the foot.*

It is also quite possible that the limitation of the blood supply renders carcinoma tissue more susceptible to x ray and radiation; at least it does not render it less susceptible.

Under surgery should also be classed the electric and the coagulating methods of treatment. These include fulguration and diathermia. Fulguration is nothing except the concentration of heat at a point where a small electrode comes into contact with the tissues. It is extremely useful in carcinoma of the external surfaces of the body and has also been used in the bladder and other hollow cavities. Diathermia, which is electrical heat, is useful in treating somewhat wider areas where it is necessary to bring the tissues to a high degree of heat, so that in reality cooking takes place. The electric energy passes through the tissues in parallel waves, provided the tissues are of homogeneous density. If there is a variation in density, the rays pass through the tissues of less density more easily than through those of greater density.

*Read before the Buffalo Academy of Medicine, November, 1925.

They also tend to concentrate from a larger electrode to a smaller one, so that it is fairly easy to plan a diathermia attack upon a diseased area.

A very interesting experiment has been made, showing a possibility of utilizing diathermia in treatment. Paramecium, which are unicellular animals, were exposed to radiation. It was then discovered that they were destroyed by a much lesser degree of heat than would be the optimum for their existence. They were destroyed by 17 to 18° C., while their optimum temperature was 24 to 28° C. If the same biological reaction occurs in cancer cells as in these unicellular animals, and they are sensitized to heat the same as are unicellular animals, then, after a preliminary raying, the cancer tissues will be destroyed by a lesser degree of heat than is ordinarily restructive to healthy tissues. For this reason we are now experimentally using diathermia after x ray treatments.

TREATMENT OF CANCER BY IRRADIATION

There is quite a difference of opinion as to the effect of radiation upon cancer cells. As Bovie and Hughes state, the rays may act by interfering with the process of metabolism, especially the inorganic salt metabolism, or may act directly upon the mechanism involved in cell division, retarding the rate of such division. The electrons proceeding from the vacuum x ray tube penetrate the cell and disrupt some molecules, while other molecules are not disturbed. If the molecules which are involved are vital for the function of the cell, the cell is destroyed, while if they are not, the cell lives but has a much reduced vital activity. Sometimes it seems that small doses of x ray may also be stimulating to cell division.

Bovie's theory of the effect of radiation is that the cell radiation produces changes in the protoplasm in which photoproducts are formed. These photoproducts act as a toxic poison upon the unaltered cell protoplasm and produce altered sequence in metabolic changes.

Radiation also disturbs the colloidal equilibrium of the cells with consequent devitalization (Sternstrom). The period of cell division is the time of greatest sensitiveness to x ray, as stated by Perthes in 1903. Bohn in 1904 attributed to the chromatin, the radiosensitivity of a cell. Holzknecht predicates his fractional deep therapy treatment of cancer upon the fact that a single radiation can only destroy the cells which are in mitosis at the time of the radiation and for this reason, it requires successive radiations to destroy the cells as they successively come into mitosis, or cell division. In a testis, ovary or thymus sterilized by x ray, there is no evidence of any vascular change or effect upon the connective tissue, so that the effect in such action must be upon the functionating cells. Again apparently fundamentally contradicting this, are the experiments of J. B. Murphy and others in which a spontaneous tumor of a mouse was removed and divided into two parts; one was given an erythema dose of x ray; each piece was now innoculated; each piece grew equally well. The untreated graft was then given an erythema dose which *included the surrounding skin;* the tumor promptly disappeared in thirty-eight out of fifty mice.

Spontaneous tumor removed, divided, inoculated; one of the grafts, after it had taken, was rayed, removed and inoculated. In seventy-nine per cent. the rayed tumor grew well.

Some regard the beneficial results from x ray as due to a large extent to substances produced by changes in normal tissues, induced by the x ray and not so much to any direct action upon the cancer cells (6). Kok, F. (7), found that more retrogression occurred when the entire animal was rayed than when only the tumor area was rayed. Rigaud holds that the cells are not directly acted upon by the rays but are poisoned by a substance liberated from the plasma or from the collagenous substance in which the cells lie. Ewing also believes that "the reaction of the tissues is an essential factor in the curative process." Portis (10) states that the röntgen rays have a stimulating reaction upon the normal protective forces of the body, or that they produce changes in the tumor tissues which stimulate the phagocytic activity of the adjacent tissues." It may be that radiation produces disintegration of the treated cells with liberation of a chemical substance which has a stimulating action upon the surrounding tissues. It is also held that radiation has a stimulating action upon the enzymes. *The fact that there is such a variety of opinion upon the effect of x ray upon cancer tissue, indicates that the action is as yet imperfectly understood.*

However, it may be regarded as definitely settled that the effect of x ray upon a tumor varies with its histological structure, with its position in the body and the particular time at which it is attacked. It seems that sarcoma and those tumors which are of glandular origin are affected to a greater degree by x ray than are the tumors of other cell types. The more superficial the tumor, the less the intervening tissues, the greater is the action of the x ray upon it. There seems to be also particular times at which the x ray has greater effect upon tumor tissues, than at other times.

The x ray also has an action upon the tissues surrounding a tumor, in that it produces degeneration, as is thought, of the endothelium; and the vessel wall becomes infiltrated with leucocytes. Proliferation into the lumen of the bloodvessel walls occurs, so that a thrombosis takes place with consequent anemia of the cancer tissue. This interferes with the growth of the tumor (Woglom, Ewing and Armstrong).

It should also be remembered that the x ray has constitutional effects. In sufficient doses and with long enough exposure, it causes an anemia of the person who is subjected to it. In some persons this anemia seems to be a factor in increasing the malignancy of the cancer. Also by some other and constitutional change, the x ray seems to reduce the resistance of the patient, so in such instances, the malignant growth spreads very rapidly. Great care should be taken in such cases in the application of the x ray as a therapeutic measure.

The x ray is extremely beneficial and curative for cancer upon the surface of the body. In such cases a cauterizing dose should be used; that is, sufficient dosage should be given to destroy the pernicious cells. This requires two or three times, even four times, the ordinary erythema dose. The action of the x ray here, as well as the action of radium, is that of a cautery. Any less dosage, according to the workers

in this field, is not beneficial. If the first dose is not destructive, the tumor cells frequently acquire an immunity against the x ray, so that subsequent treatments with it are useless. This we have seen exemplified in many cases at the Pittsburgh Skin and Cancer Foundation, where it has been necessary after repeated and long continued treatment by x ray and radium to do a radical excision of the growth. In some cases, after x raying the tumor, the cancerous tissues should be removed by surgical means, as potentially they act as a focus for reinfection and reproduction of the growth. Removal may in some cases be made by the cautery. In every instance, it should be as thorough as is possible.

Apropos of the treatment of skin cancer it is significant that over eighty per cent. of basal cell cancers are cured. It is rather more difficult to treat the prickle cell carcinomata, especially those of the cervix and of the mucous membrane, than it is to treat the basal cell type of carcinoma. These cases should be treated by direct implantation of radium or by excision. It seems to make no difference whether the adjacent lymph glands with their surrounding fascia are removed primarily or secondarily to the removal of the carcinomatous lesion. In removing a carcinomatous lesion, pressure should not be made upon it and care should be taken not to open up adjacent lymph pathways, even though the fascia and lymphatic tissue through which the gland drains have to be removed by a prior operation.

Hazen and Whitmore find that of basal cell cancer, only fifty per cent. of cures resulted when they had cases which had previously been treated with röntgen ray or radium. Only forty-five per cent. of prickle cell cancers were cured and forty-one per cent. of gland cancers.

Before irradiation, the blood should be examined and if the patient is anemic, especially if the anemia is severe, a transfusion should be done. An attempt should be made by the radiotherapist to so regulate his treatments that leucopenia does not result. Those cases not showing leucopenia (Minot and Swelling) and showing an increase of lymphocytes (Murphy) did the best.

SENSITIZATION TO X RAY

Webster believes that preliminary ionization with copper selenate may sensitize to x ray. Galvanic current also has been used by Wintz for the same purpose. It has been found that after passing galvanic current through the lower portion of the abdomen, so that it encounters the uterus, that the radioactive effect of x ray or radium is greatly increased.

Cachetic individuals, i. e., those with very low resistance and low blood pressure and low blood count, should not be given x ray treatment; nor should those in whom the disease is too widespread or metastases are present and are diffused, especially in cases of ovarian tumors of a malignant nature in which the metastases are spread throughout the entire abdomen and in the pelvis.

CONSTITUTIONAL TREATMENT

The second active division of treatment is the constitutional treatment; that is, the attempt to influence the growth by changes in the body itself—either by introduction of drugs or organic substances, by diet, by stimulating the protective, reactive processes of the body itself against the cancer by serums, extracts, vaccines, etc. The first requisite of cancer therapy is to put the cancer patient in the proper attitude toward his disease. The question frequently arises, should we tell a patient suffering from cancer what is his trouble. I think the answer depends particularly upon the type of person whom we are treating. If he is of the nervous, apprehensive, fearful type, I believe that it is well for us to procrastinate in telling and gradually allow the knowledge of what is wrong to enter the consciousness of the patient. For the time when this knowledge becomes definite and he realizes the full import of his condition, he should be prepared by suggestions that cancer can be cured, that in its management and control many advances have been made. To support this belief of the patient, active therapeutic measures of one type or another should always, in every case, be persistently continued; for it is to these measures of relief that the patient clings with steadfast purpose and hope for cure. Fast desire for betterment is a therapeutic measure that should never be neglected by the physician. In this respect all causes for worry should be taken away. No mental anxiety should be permitted; all disturbing efforts should be avoided.

Sir Astley Cooper recognized the disturbing influence of mental unrest upon a cancer patient, for in speaking of the breast scirrhus, he says: "the disease is made up of a derangement of the constitution and of a peculiar local action. I should have observed just now, when speaking of the cause of the complaint, that one of the most frequent is grief or anxiety of the mind. It averts the progress of the secretions and other conditions. How often have I seen, when a mother or nurse has been watching night after night, that in a short time after this, she has come to me with an uneasiness in the breast, which on examination I discovered to be scirrhus. Look, then, in this complaint, not only at altering the state of the constitution, but relieve the mind and remove the anxiety, if possible."

A cancer patient should be allowed to husband his resources to fight a most desperate battle. He should be given good food, good air and good surroundings. Every attempt should be made to keep up the patient's weight, because starvation causes an acidosis and further it has been found that tumor cells can and do utilize the tissues of their host when there is nutritional deficiency so that starvation of the host acts as a boomerang to his own undoing. The bowels should be kept free; elimination should be active.

In cancer, as there is usually an acidosis, the alkalinity of the blood should be estimated by frequent examination and determination. All the emunctory organs of the body should be active.

DIET

It is very difficult to define the action of diet upon cancer. The intake of food by the host does not seem to have any influence upon the rate of growth of cancer cells. For cancer acts in the same way as does the fetus in utero and will continue to grow despite the fact that its host is dying of starvation. It has been found that the diet which produces restriction of somatic cell growth is the one that increases cancer tumor growth. It is also found that cholesterol in

transplanted growths has a stimulating action upon the tumor growth and its metastases. Deprivation of food does not seem to have lowered cancer mortality as is shown by the prewar and postwar statistics of any European city.

That the character of the food may have some influence upon cancer growth may be indicated by statistics of the Chicago Board of Health which show that the percentage of deaths from cancer among emigrants from Oriental countries and native Americans was much less in proportion to number than among Germans and immigrants from Eastern Europe. It was found on studying the diet of the Orientals, that they did not eat meat and that the Americans ate very little; while other nationalities ate large quantities of flesh. This seems to corroborate, in a small way, the contention of those who hold that a meat diet is harmful in patients suffering from cancer.

However, this idea is again controverted by the experimental work of Fugiura and Benedict, who from a series of tests on rats and mice, conclude that "the malignant character of cancer cells cannot be influenced by the ingestion of high protein or protein free diets or high carbohydrate or low carbohydrate diets."

SODIUM BICARBONATE IN THERAPY

Of the production of an alkalosis as a means of cure or prevention, it has been found that cancer always produces a lactic acid increase in the blood. C. F. Cori and G. G. Cori of Buffalo, in their study of carbohydrate metabolism of tumors, found that if a tumor were growing on one wing of a chicken, the blood which passed through the tumor contained on an average twenty-three milligrams less sugar and 16.2 milligrams more lactic acid than the blood which passed through the tissues of the normal wing. The plasma obtained from the blood on the tumor side showed with such rate of metabolism 3.7 per cent. less of carbon dioxide than that of the normal side. A plasma blood that had been collected under oil, gave as an average only .7 volume per cent. less of carbon dioxide when compared with that of the normal side.

In addition to the above is the fact that Blumenthal and Frau Rhoda Erdman were not able to grow cancer tissues artificially, unless they added to the media, small quantities of lactic acid. In other words, the media in which the growth occurs must be acid. It is also a pertinent fact and should give us pause for study, when we observe the alkalosis which is produced by deep therapy on the treated cancer area. The alkalosis, according to the researches of Doub and others, is most intense at the point where the deep röntgen rays would be most concentrated and gradually becomes less toward the periphery of the growth where the concentration of the rays would be less.

From this fact it might seem possible that the beneficial effects of röntgen ray therapy may in some way be due to the production of alkalosis in the tissues, so that the cancer cells, localized in that tissue, are not able to receive the normal stimulating substance, the socalled argusic or autoxic principle which stimulated them to uncontrolled reproduction.

However, the conclusions which might be formed from these experiments are not to be formulated except through a mass of somewhat contradictory evidence. It has been found by Warburg (12) "that glycolysis is the factor supplying the reaction for growth. The splitting of carbohydrate into lactic acid (in which Meyerhof and Hill see the source of energy for work) may furnish the driving forces for growth." "From experimental work" (Warburg concludes), "there is no growth without glycolysis." Warburg (12) also believes that the causative factor for growth in tumors is an oxygen deficiency.

It is Warburg's idea that in oxygen deficiency (produced by pressure, sclerosis, action of bacteria and other influences) certain cells which are not able to glycolyze, die; those able to glycolyze, live. In other words, the cells able to live, utilize energy set free by the glycolysis and grow at its expense. The lactic acid presence gives the cells the stimulant or urge for growth.

It was likewise a potent fact that when the glycolytic power of tumor tissue is destroyed, as by freezing with liquid air, the tumor tissue cannot be transplanted. Therefore, glycolytic activity is an integral part of the tumor cell. Human carcinoma produces under anerobic conditions sixteen per cent. of its weight in lactic acid per hour. This is three or four times as much per hour as benign tumors produce.

A peculiar fact is noted in this work of Warburg's and that is, that bicarbonate in increasing concentration with a constant Ph produces a constant increase in acceleration of glycolysis. If bicarbonate solution is not in the Ringer solution in which the growth has been produced, there is only a slight degree of glycolysis. We notice that he keeps the Ph constant, so that there is in reality no increase in the alkalinity of the tissue. In the treatment of cancer we are attempting to apply certain conclusions derived from the mass of data given above. At present we are giving certain of our patients alkalies so that the Ph concentration is about 7.3 or less. Frequently the patient tests the reaction of his urine and takes sufficient quantities of bicarbonate to keep it constantly alkaline.

We have observed the following phenomena: the growth seems at least temporarily subverted; the patient's appetite increases; pain is lessened and temporary wellbeing results, with increase of weight and better mental attitude of the patient toward his disease. However, he cannot long continue with heavy doses of bicarbonate as it destroys his appetite. We have tried giving it in capsules, which is some slight improvement over the older method.

DRUGS

Many attempts have been made to influence cancer through the use of substances introduced through the circulation. The nuclei of cancer cells stain deeper than do those of normal tissue. Wassermann thought that if he could combine a nuclear poison with a nuclear dye, the dye would probably carry the cellular poison into the nucleus and thus produce cell death. For this purpose he combined the selenate of copper with eosin and introduced it intravenously. The amount of the drug necessary to produce cellular death was so great that about seventy per cent. of the animals (rats and mice) upon which it was tried, died. As far as I know, no attempt was made to treat human subjects with this remedy.

(To be concluded)

Instruments, Apparatus, and Clinical Notes

The Homigrade Thermometer

F. E. ASPINWALL, M.D.

Miami, Florida

Why a new thermometer scale? Is not the Fahrenheit good enough? And is not the centigrade perfect? "Come, let us reason together" in order that we may arrive at correct conclusions regarding these matters.

That the Fahrenheit scale is absurdly unscientific is conceded. Its zero is nowhere of consequence, and does not serve to separate important values. Hence its every figure is a misfit, and is misleading as to values. It fails in the one great purpose of figures which is to impart a realizing sense of values.

That the centigrade degree is too long for ordinary precision, as in weather reports, without constant resort to fractions is selfevident. In this case the fractions would be burdensome. In the centigrade clinical thermometer the degrees and tenths are two and seven tenths times as long as are those of the homigrade thermometer, which has the shortest degrees of all and is therefore the most precise with or without fractions. Moreover, the centigrade figures give no realizing sense of the values for which they stand because of the want of a suitable figure to express the human normal, which is the only point from which values can be clearly realized. This idea is appreciated only when it is known that man has a very intimate knowledge of his own normal within the radius of his sense of heat, and that he consciously or unconsciously measures all temperatures as sensed by comparing them with this normal, which is his criterion of temperature values. In the making of a thermometer it is not wise to ignore the nature of man. He may use an instrument thus out of harmony, but it can not be wholly satisfactory.

There is no reason why the numerals of a temperature scale should not express values as clearly as do those of any other measure. This is a reasonable requirement which is met completely only by the homigrade scale. And it is in line with the nature of man. It aids man in his natural tendency to measure all temperatures by comparing them with his own normal, and it reduces this natural system to scientific accuracy. It, in fact, expresses every temperature as a percentage of the human normal. And this is only half. The other half is a definitely understood measure from the vital heat zero, the point between freezing and thawing. A thing that is perfect so appears from every angle and in every detail. Let us see if the homigrade scale so measures up.

In the homigrade scale zero is at the point without dimension between freezing and thawing, which in this system is called the vital heat zero, because even in the hardiest of organisms or parts thereof this point marks the complete cessation of vital action, functioning being resumed, if possible, only after a sufficient rise in temperature. The least fall in temperature below this zero causes a congelation of their fluids which destroys some organisms. Life is destroyed in some others before 0° H. is reached.

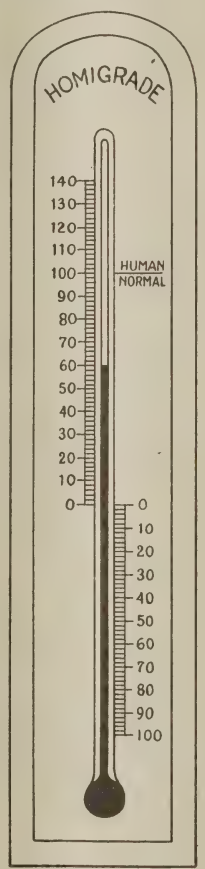

FIG. 1.—The homigrade thermometer.

When a thermometer tube is placed in the coldest of pure ice water and marked for the freezing point the point thus marked is very close to the zero between freezing and thawing. The water is not at the freezing point. If it were it would be frozen. An imperceptible variation from this zero is either freezing or thawing. Thus it is understood why these three points, freezing, zero, and thawing, have been regarded as one point. Freezing is below the zero; thawing is above it with no measure between, just as there is no measure between a piece of ice and the water in which it may be placed. This is the only true zero in the temperature scale, all other points being measures from this point. In the economy of nature it is the true point of division between heat and cold. Receding from this point both heat and cold become more intense. On one side there is life, and conscious activity. On the other side there is complete suspension of vital action. Hence is seen the propriety of measuring vital heat from this zero 0° H., which is the lower fixed point of the homigrade scale.

To express the standard boiling point of water in the homigrade scale the figure 270, which, by the way, contains even nines, was chosen because of consequent ideal figures at other important points in the scale, especially 100 at the human normal, or full vital heat within the radius of common sensation. This point is one tenth of a homigrade degree above 98.6° F. and 37° C. It has, however, been observed under the tongue, in the axilla, and even in the palms of the hands when there was full flush of heat and perfect health and comfort.

This scale therefore constitutes a new centigrade with its 100 mark at the human normal. Hence its degrees have each a value of one per cent. of the measure of this normal, and its every figure expresses not only a clearly understood measure from the vital heat zero, but also a true percentage of the human normal, which thus becomes the unit of value of the homigrade scale, corresponding exactly to the dollar in the United States money system.

This scale therefore is bimetric, furnishing instantly two measures or definitions of every temperature.

The four cardinal points of the homigrade scale are 100, 50, 0, and —50. They mark the human normal, separate the seasonal temperatures, and limit the normals of heat and cold. They are briefly described as follows:

100° H. human normal. The full vital heat within the radius of common sensation, a measure of one hundred homigrade degrees from the vital heat zero. The unit of value of the homigrade scale. The limit of normal summer heat, above which is extreme heat.

50° H. The point between spring and summer, and summer and fall temperatures. An ideal atmospheric temperature for active work or play in moderate clothing.

0° H. vital heat zero. The zero between freezing and thawing, and hence between winter and spring, and fall and winter temperatures. Point of separation of positive and negative values.

—50° H. Limit of normal winter cold, below which is extreme cold. Note that seasonal temperatures are not determined by the calendar, but by their measures from the vital heat zero. They are best exemplified in the temperate zones.

Thus is seen the most ideal exposition of the seasonal temperatures with lines of demarkation so fitting and appropriate that they can not be forgotten.

The clinical section of the homigrade scale is from 85 to 115, which includes the normal and 15 degrees of departure both above and below, these being the usual limits of departure compatible with life. Every body temperature is expressed as a true percentage of the human normal, thereby giving a concept of values that would be otherwise impossible. The following table is offered as an aid in the study of body temperatures:

HUMAN NORMAL

100° H.

Subnormal		*Supernormal*	
95° H.	moderate safe	105° H.	moderate safe
90° H.	low dangerous	110° H.	high dangerous
85° H.	very low usually fatal	115° H.	very high usually fatal.

Here again the homigrade figures are ideal and so fitting that they are memorized in a minute and never forgotten. Equally ideal are the homigrade figures that express the usual bath temperatures, as here shown: Cold, 50° H. Very cool, 60° H. Cool, 70° H. Tepid, 80° H. Warm, 90° H. Normal, 100° H. Hot, 110° H. Very hot, 120° H.

Ideal indoor temperatures range from 50° H. to 60° H., which range includes the first ten degrees of summer heat. There is usually neither chilliness nor overwarmth within this range, but departures either above or below are likely to cause more or less discomfort indoors.

There is but one point in the two scales where the homigrade and Fahrenheit figures are identical, 96 expressing the same temperature in both scales. Receding from this point their figures become increasingly different according to their ratio of 1.5 to 1. This incidence results in a close similarity of the figures used in these two scales to express high summer temperatures. Hence in adopting the new scale nearly all summer temperature figures will seem familiar. A noteworthy coincidence is that this figure 96 expresses the highest temperature ever recorded here in Miami by the United States Weather Bureau. As to temperatures near freezing, as in spring and fall, it is always desired to measure them from that point. Here the homigrade thermometer furnishes the desired information at a glance and in terms that are instantly understood. And it is a pleasure to note the existing temperature and realize at once its value and the season to which it normally belongs.

In the homigrade thermometer all figures above the zero express positive values and are placed to the left of the tube. All figures below the zero express negative values, and their position is a perfect reminder to not omit the minus sign when using any of them. Thus the positive and negative values are clearly separated as are assets and liabilities in accounts.

With the perfecting of the scale it was a surprise to find that the ratio of the homigrade degree to the Fahrenheit is exactly 1.5 to 1, and to the centigrade 2.7 to 1, thus rendering conversion of the scales an easy matter. Hence to convert Fahrenheit to homigrade multiply the exact Fahrenheit measure above or below freezing by 1.5, and to convert centigrade to homigrade multiply by 2.7. The process is reversed to convert homigrade to either of the other scales. The ease with which conversions are thus made renders the adoption of the new scale an easy matter, and one not attended with any confusion whatever, in fact with satisfaction only. It will be found a pleasure to convert the practically meaningless figures of other scales, to homigrade and thus cause their values and interrelations to appear as the rising sun.

The homigrade system of temperature measurement appeals to reason, and satisfies the desire to know. It so expresses temperatures that they are at once understood from each of two different angles. Its every figure has two distinct meanings that go direct to the understanding and satisfy it completely. With its other distinctive features there is nothing more to be desired. Moreover, it is world owned[1], and not a monopoly.

134 N. W. Sixth Ave.

The Electrocardiogram in Myocardial Insufficiency.—A. Clerc and R. Lévy (*Presse médicale,* March 27, 1926) lay stress on the prognostic importance of records in which the waves are flattened or broadened to such an extent as to constitute only small oscillations above or below the isoelectric line. Pathology has supplied no decisive evidence in favor of aborization block as the cause of these manifestations, which are better accounted for by myocardial fatigue.

[1] A few homigrade thermometers have been distributed in some of the principal cities of the world, but the writer has no instruments for sale. Should the reader desire to have any made by his favorite instrument maker, the writer will without charge furnish all needed specifications.

A Device for Facilitating Digital Examination of Rectum

J. F. MONTAGUE, M.D., F.A.C.S.
New York

In these days of periodical health examinations complete physical examinations are being made in daily increasing numbers. As a matter of thoroughness a rectal examination is included in the routine and usually consists in a digital examination. Although the method has limitations, yet there is no doubt as to its field of usefulness. It is very simple, of course, in its technic and consists of palpating the tissues of the anal canal, the rectum, and their pelvic neighbors, with the index finger.

Decency, of course, demands that the finger and hand be protected from soiling and this requirement is usually met by the use of a rubber glove. However, employment of the rubber glove has distinct disadvantages, chief among which are the impairment of the tactile sense by the thickness of the rubber imposed between the skin of the finger and the tissues palpated. Then, too, there is the likelihood of tearing the glove in the process of putting it on and taking it off—the labor of cleaning individual glove fingers, and finally the actual cost of the glove.

Heretofore, these two chief disadvantages of the rubber glove have been overcome in the following manner: The use of a finger guard consisting of a circular piece of rubber, in the center of which one finger has been cemented, has successfully overcome the disadvantage of difficulty in cleaning, and then the smaller likelihood of being torn has proved them to be more economical than gloves. There is still, nevertheless, the objection of an interference with tactile sensibility. The latter disadvantage is usually circumvented by the use of a thin tissue rubber finger cot, but when these are employed one must forego the hand protection afforded by the guard of the previously described device. If we attempt to have an entire finger guard made of this thin rubber, we find that we have an extremely fragile affair which tears very readily and is expensive because of the constant need of replacement.

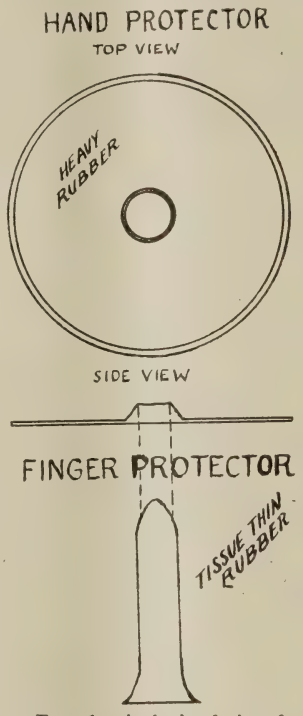

Fig. 1.—Author's device for facilitating digital examination of the rectum.

For some time past I have been using a device which has proved very practical and serviceable and one which I believe combines the advantages of both the finger guard and the finger cot. Briefly, it consists of a circular shield of heavy rubber eight inches in diameter with a central aperture just a little smaller than will admit the average index finger. This serves to protect the hand from soiling. The second part of the device consists of a thin tissue finger cot. This acts as a protector to the finger.

It is readily apparent, therefore, that by this combination we have an ideal arrangement for digital examinations, since we are afforded the utmost in tactile sensibility and yet do not have to forego the protection of the shield. The shield is easily cleaned and lasts indefinitely. The cots are easily replaced and when torn their replacement is a cheap procedure.

No doubt this arrangement has occurred to others but I have never seen it used and being convinced of its advantages take this opportunity to suggest its use to any who have occasion to make rectal examinations.

540 Park Avenue.

Methods of Staining Tubercle Bacilli.—H. J. Corper (*Journal of Laboratory and Clinical Medicine*, March, 1926) examined twenty sputum smears containing tubercle bacilli by thirteen staining methods. With properly performed technic the majority of these methods result in staining the tubercle bacilli in the sputa with equal efficiency, but with a decided difference in the ease of performance, speed, and simplicity of the various methods. Sixteen different positive sputum smears consecutively stained and restained (after destaining) by nine different methods (Ziehl-Neelsen, Andrejew, Herman, Konrich, Gasis, Fontes, Burke and Dunning, Ehrlich, and Spengler) emphasized further the importance of technic in the staining of tubercle bacilli. Much's (Gram) method alone proved unsatisfactory with sputum on account of the difficulty of differentiating tubercle bacilli from other small cocci and dye precipitates, since in the majority of cases only the granules stain. Double bacillary staining (carbolfuchsin—Gram-Much) of sputum and pus did not increase the efficiency of the simple single bacillary (carbolfuchsin) stain but increased the cumbersomeness of the technic. For practical purposes the simpler methods have the advantages of speed and simplicity. The finding of acid-fast bacilli (with the usual clinical precautions) practically certifies a diagnosis of tuberculosis by the simple methods, while the presence of Gram (Much) granules alone requires corroborative positive animal inoculation findings to certify the diagnosis. It is for this reason that the Gram (Much) granules and combined methods are mainly of academic interest. It does not seem that the Gram granules differ from the granules seen in appropriately stained carbolfuchsin preparations since their numbers, morphology, and location appear to be identical. Preparations stained first by the Gram (Much) method followed by the modified Ziehl-Neelsen carbolfuchsin-acid alcohol technic reveal only blue granules in a red bacillus.

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The Epileptic Convulsion as a Type of Extrapyramidal Motor Disturbance*

LELAND B. ALFORD, M.D.

St. Louis, Mo.

As is now well known the extrapyramidal motor disturbances are due to lesions involving the corpus striatum, substantia nigra, red nucleus, and perhaps other cell groups situated at the base of the brain. The best known of these disturbances are chorea, tremor and athetosis but to these may now confidently be added torsion spasm and myoclonus. In the present article it is the contention that the epileptic convulsion is also an extrapyramidal disturbance.

The extrapyramidal disturbances are produced by any manner of lesion that affects the nuclei mentioned. But here we shall direct attention to that pathological process which consists of a selective degeneration arising on a basis of innate weakness and is designated, following Gowers, abiotrophy. The conditions that depend on this process are the progressive muscular atrophies and dystrophies, Friedreich's ataxia, Huntington's chorea, otosclerosis and the like.

For some years I (1) have been interested in the process, abiotrophy, because of its possibilities in elucidating some of the dark corners of neurology and psychiatry. Its selective attack and microscopical appearance are best understood by considering progressive muscular atrophy and Friedreich's ataxia. In many of the conditions the lesion has not been demonstrated, for instance, Huntington's chorea and paralysis agitans, but can safely be subsumed to exist by analogy and general considerations. The total number of the abiotrophies is about fifty. A majority of them are quite rare but if epilepsy and dementia precox are eventually found to be abiotrophies, they will constitute the most important group of conditions in all medicine.

The abiotrophies have received but scant attention as a group. This neglect seems to arise partly from the fact that neurologists in general and authors of text books in particular have been more interested in nervous physiology than in pathology, and partly from the obscurity of the various types, which necessitated concentration in research on one form. The consequence of this situation is that the process, abiotrophy, is little understood, but in recent years German workers (2) are showing increasing interest. Apparently the process is essentially the same in all the abiotrophies, the symptoms of the different types depending on the structures where the process happens to centre. It is the localization, not the process, that is specific.

This being true we can erect the abiotrophies in a sort of graded series and by studying the series as a whole derive many instructive conclusions in regard to individual members.

Epilepsy is included among the abiotrophies by virtue of the clear influence of heredity, the postnatal onset, and the progression which is evidenced in the mental deterioration.

There is some difference of opinion, it may be said, in regard to the origin of the mental deterioration of epilepsy. It has been ascribed to the use of bromides, to the exhaustive effects of the attacks and to mental conflicts; and no doubt these all contribute to accentuate it. But all facts considered, the most plausible conclusion seems to be that of Turner (3): " . . . the mental condition (deterioration) is not solely a consequence of the seizures but is an expression of the same nervous constitution which gives rise to the convulsions." It would seem that workers in epilepsy have not accorded sufficient significance to the mental symptoms. Being permanent, one would judge that they are a better index of the pathological process than the more spectacular seizures. We would, therefore, conclude that the progressive mental deterioration is an indication of a progressive destructive process.

The extrapyramidal disturbances are all represented in the abiotrophies and, furthermore, often occur in combinaton with mental deterioration. For example, chorea occurs in Huntington's chorea, tremor in paralysis agitans, athetosis in progressive cerebral diplegia, torsion spasm in Oppenheim's dystonia musculorum deformans, and myoclonus in myoclonus epilepsy. Of these the first and last are characterized by marked mental deterioration.

In classifying epilepsy with the abiotrophies one, for obvious reasons, places it next these conditions

*Presented at the meeting of the National Association for the Study of Epilepsy, New York, June 7-8, 1926.

of which the symptoms are composed of progressive mental deterioration in conjunction with motor disturbances. To this arrangement the greatest scepticism will arise from the implication that the epileptic convulsion is in any way analogous to chorea, tremor, and the like. So it now becomes our task to consider this point more in detail.

II.

At first glance one gets the impression that the epileptic convulsion is essentially different from the extrapyramidal disturbances. Seizures except in the case of status are discontinuous while extrapyramidal disturbances are continuous. Again if seizures depend on a relatively stationary lesion, a second factor or factors must be hypothecated in addition to account for their initiation.

Still there seems no reason to conclude that continuity is an essential characteristic of extrapyramidal disturbances. These all vary with emotion and voluntary effort and all cease during sleep. Myoclonus, at least in the early stages, may show intermission. Thus other factors than the lesion influence the symptoms.

The idea of the origin of convulsive phenomena in infracortical mechanisms, furthermore, is not entirely novel. The Jacksonian attack has served to fix attention on the cortex in epilepsy; but as we shall see the cortical origin of Jacksonian attacks is not inconsistent with the conception herein supported. Despite the prevailing belief that the convulsion begins in the cortex, there has been for years, without any particular justification, a theory that the clonic component represents the activity of infracortical mechanisms. Then, too, cerebellar fits, socalled, and the tonic or postural fits of Wilson (4) have been accepted as having infracortical origins.

It is only within the last two years, however, that the infracortical origin of the epileptic convulsion is being discussed. Sterling (5) in 1924 in an article of which one part of the title is Remarks on Extrapyramidal Epilepsy, referred to spasmodic manifestations in epidemic encephalitis. For one thing he mentions the fact that he had previously advanced the suggestion that some attacks might be negative or paralytic. Now he wishes to add a third type of seizure, "extrapyramidal epilepsy."

Krisch (6) also in 1924, devotes to the subject two articles entitled respectively, Epileptic Motor Variations and Their Connection with Exogenous Hyperkinesia as well as the Extrapyramidal Symptom Complex and An Analysis of the Extrapyramidal Localization of the Epileptic Attack and Its Variations. In the first of these articles Krisch cites cases and discusses the occurrence in epilepsy of such motor exhibitions as chorea, tremor and clonus. He concludes: "The epileptic motor attack in the true sense (tonic-clonic attacks) as well as the epileptic motor variations (cerebellar, focal, dromoleptic and pyknoleptic [Schroder] syndromes) present stormy and quickly passing disturbances in the same structural systems which in the disorders with dystonic symptoms are affected more subacutely or chronically."

In the second article Krisch discusses the theoretical considerations of extrapyramidal attacks. He concludes: "By and large we may regard the generalized tonic attacks as an excited state of the motor tegmental system in which cerebellar, striatal and cortical regulation is broken down."

Last year Wimmer (7) of Copenhagen, under the title, Studies on the Extrapyramidal Syndrome, discusses striatal epilepsy and more directly refers to the possibility of seizures of an epileptic nature arising from lesions of the extrapyramidal mechanism. After describing a case in which torsion phenomena and a variety of seizures occurred together he asks the question, Is there a striatal epilepsy? This he answers: "I am led to believe there is." His evidence is, first, the occurrence of aberrant motor manifestations such as tremors, torsion, and choreic movements in cases of epilepsy and, secondly, the association of epileptoid and other tonic seizures with extrapyramidal syndromes in epidemic encephalitis. In two cases quoted from the literature autopsy demonstrated lesions located in the striatum. He also mentions the occasional noting of seizures in cases of Westphal's pseudosclerosis. In the conception of striatal epilepsy he sees no bizarre phantasy but only a variation in reactions and mechanisms which we now accept.

At this point it may be stated that I have under observation at the present time, in St. Louis, a family in which the mother and a son are afflicted with severe epilepsy while a daughter presents the typical picture of Huntington's chorea in a moderately advanced stage. Epilepticlike seizures in epidemic encephalitis are also seen by every neurologist at the present time.

The conclusions of the writers just quoted are all the more convincing since, although reached by another approach, they are identical with mine, which were reached by a consideration of the pathological process.

To me, however, the most convincing of all evidence has been entirely overlooked. This evidence is furnished by the entity, myoclonus epilepsy. Here in an abiotrophy in which mental deterioration is a marked feature, we have epilepsy intimately associated with an extrapyramidal disturbance. It seems strange that observers should not long since have perceived the significance for epilepsy of this association of symptoms. In discussing this disorder, although failing to derive any deductions in regard to epilepsy proper, Barnes (8) remarks: ". . . so the two marked manifestations may justifiably be assumed to have the same exciting cause and to reflect the irritability of the same regions of the nervous system."

It is true that myoclonus is not as constantly mentioned as an extrapyramidal disturbance as are some of the others; but still many writers so regard it and in an excellent critical review Pierce Clark (9) states: "In conclusion one may say that aside from myoclonia being a symptomatic accompaniment of various organic diseases more or less pronounced, it appears to exist solely in an ultramicroscopic lesion in the mid brain *per se;* an abiotrophy of the neostriatum or lenticular region between the corpus striatum and the globus pallidus is the most probable seat of the lesion in which the tonectic function of the neostriatum is affected."

Our conception that the specific causal factor in epilepsy is an abiotic degeneration affecting certain extrapyramidal structures presupposes the activity of nonspecific, exciting influences. Thus we may pic-

ture in our minds the extrapyramidal regulatory barrier containing a defect which is the consequence of the degeneration and over which to precipitate the convulsion floods nervous energy increased above the normal level. Any influence, then, which increases nervous energy—or tension or irritability or whatever it may be called—past a certain point can excite the individual fit. As exciting causes we can have a great number of factors, physical and mental. Even in the absence of defect we can conceive that sufficient augmentation may result in such overflow, as would likely be the situation in case of toxic and of Jacksonian convulsions.

Of the foregoing argument, as of all theoretical considerations, it may be said that the value lies in its providing a lead for further investigation and observation. This is something since it comes at a time when no progress is being made.

SUMMARY

Epilepsy is considered as one of the abiotrophies, or degenerations of the nervous system that depend on inherited predisposition. Among these are a number, for example Huntington's chorea and myoclonus epilepsy, that show a combination of mental deterioration and extrapyramidal motor disturbance. This combination suggests the possibility that the epileptic convulsion itself may be an extrapyramidal disturbance. Without considering the pathological process Krisch and Wimmer have arrived at the conclusion that such is the case. Myoclonus epilepsy presents a combination of an extrapyramidal disturbance, myoclonus, with seizures that suggest a common pathological process and localization for the two symptoms. The implication for epilepsy is obvious. If we accept that the specific factor in the causation of epilepsy is a degeneration in one of the extrapyramidal nuclei, we must concede as exciting factors of the individual fit any influences that heighten nervous tension at least in a certain way.

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Humboldt Building.

Bilateral Abducens Paralysis Associated with Paralysis of Convergence

J. PAUL DE RIVER, M.D.

San Francisco, California

The loss of the function of an organ is of twofold importance; primarily to the patient and secondarily to the physician. A clear understanding of the anatomy and physiology is a fundamental requisite when searching for the etiology. It is also essential that a knowledge of the anatomical distribution of the nerve elements supplying the given part be understood, together with the function of such nerves of supply.

Sight is undoubtedly the most valued of the five special senses. Thus, any disturbance of the visual acuity, whether directly due to a lesion in the eye or visual pathway, or indirectly resulting from motor paralysis of the extraocular muscles, becomes a matter of great concern, a handicap to the patient and a problem for the physician to solve. Granting this, it behooves us to acquaint ourselves thoroughly with the motor and sensory nerves supplying this organ, ever remembering the close relationship between the eye and the great coordinator, the brain.

While this subject deals with motor paralysis, it will not be amiss to remember that the eye is but an offshoot of the brain; the retina being an outgrowth of the rudimentary brain of the primary optic vesicle, and the optic nerves being parts of the lobes of the brain. If we think of the eye in these terms it will help us to understand why, in certain diseases of the brain and nervous system, the eye with its adnexa is so frequently affected. At times the symptoms appear very nearly in the course of some grave organic disease whose primary changes are manifested in a visual disturbance or loss of motor function, resulting from degenerative lesions or biochemical changes in the blood, as in syphilis which affects the delicate and highly specialized nerve tissue. They may also be due to direct mechanical interference with the function of the part, i. e., pressure due to neoplasms, etc.

It is a good deal of a shock to an apparently healthy individual suddenly to realize that his precious sense of sight has been reduced or completely lost, or that his field of vision is limited by paralysis of one or more ocular muscles. Often in the course of a hurried examination the busy doctor overlooks such conditions. Nor does he learn of his erroneous diagnosis until a more observing colleague goes over the patient. Were this the finale of the act it would be serious enough, but unfortunately it isn't. Consider the time the patient has lost seeking the cause of his trouble and the expense entailed. Also the doctor's unpleasant duty of informing the patient that his condition is beyond cure.

In considering the causes of the early symptoms of many grave diseases of the brain and central ner-

vous system which manifest themselves through the medium of the eye, let us remember what von Graefe said: "About one third of ocular paralysis is due to syphilis." Although I believe this to be a low estimate, considering the rapidity with which the disease has progressed, I shall leave it to the readers' judgment and return to the discussion of one or two of the most common conditions encountered early in syphilis.

Convergence paralysis is a condition very often overlooked, yet I believe it as positive a sign and as frequently encountered as the Argyll Robertson pupil which we associate with tabes and progressive paresis. That it is not more often found is because we do not test the power of convergence as thoroughly as we should. We therefore overlook a most valuable sign, which is often the earliest and only one of the disease.

I have come across convergence paralysis in innumerable cases. Some of them presented few subjective symptoms, and denied ever having a primary lesion. However the Wassermann test was positive. Let me add that I do not content myself with a blood Wassermann, for a number of my cases gave a negative blood Wassermann while the report on the spinal fluid was positive. For this reason I reiterate: "It is just as important to test the power of convergence as it is the pupillary reaction." If a patient shows a paresis or paralysis of convergence, provided his visual acuity is not reduced, I attribute it to syphilis until proved otherwise.

Authoritative textbooks tell us there are other causes of convergence paralysis, namely: multiple sclerosis and disseminated sclerosis accompanied by a form of nuclear palsy which may cause the loss of power of convergence without the loss of lateral movements. The sight of the lesion causing this disturbance is thought by many to be located in or near Deiter's nucleus in the medulla oblongata. Bernheimer believes the anatomical sight of the lesion is in the fibers connecting the nondecussating fasciculi of the two internal recti nuclei with each other, or connecting their fasciculi with the cortex. In Edinger's seventh edition of *Lectures on the Structure of the Nervous System,* his theory is that the centre of convergence may be formed by the large cell median nucleus of the oculomotor nerve, associated with the nerve cells for the rectus internus which lies on either side near the median nucleus, and that these groups may have a common centre of convergence. Many even doubt the existence of such a centre. However, my clinical experience, based on the number of cases encountered, leads me to believe that one does exist.

From a condition that is quite common let us turn our attention to one that is less so, and, when it does exist, may occur independently or be associated with a convergence paralysis. I now refer to paralysis of divergence. As to the location of the centre of divergence, Duane maintains that a paralysis of divergence may be explained by lesions near the two abducens nuclei. It has been further stated that the causes of divergence paralysis may be of basilar or nuclear origin, the diagnosis being largley based on the accessory symptoms. Bilateral paralysis of the sixth nerve have been noted in tabes (Landolt). Certain acoustic tumors at the level of the pontine angle of the cerebellum can produce the aforesaid condition; but as a rule other nerves are involved and we have the accompanying symptoms of vertigo, nystagmus, ataxia and other conditions, indicating disease of the cerebellum or labyrinth. This conditions has also been noted in syphilis, tumors of the posterior portion of the pons near the median line and aneurysms of the basilar artery.

In dealing with divergence paralysis let us consider the course of the abducen nerve which supplies the external rectus muscle. The nucleus of origin is the lowest of all the motor nuclei of the eye, and is situated behind the pons in front of the ementia teres in close proximity to the facial nerve. The root fibres of the sixth nerve do not cross with those of the opposite side. The fibres unite within a single bundle, pass forward and cross the medial longitudinal bundle, traverse the trapezium and appear at the base of the brain between the pyramids and the posterior border of the pons. It then courses forward and upward along the median extremity of the petrous portion of the temporal bone, over the apex of which it curves and enters the cavernous sinus. In the sinus it lies close to the internal carotid artery, following the ophthalmic division of the fifth nerve; penetrates the orbit at the inferior extremity of the superior orbital fissure, and enters the muscular cone (Landolt).

The diagnosis of convergence paralysis is based on the subjective and objective findings. The patient complains of double vision, increasing as the objects approach, and eye strain. The objective signs are crossed diplopia in the primary fields, remaining the same in all other fields. The near point of convergence is increased, with exotropia for near and possibly orthophoria for distance. Extraocular muscle movements may remain normal, revealing no individual muscle paralysis.

Divergence paralysis is usually a primary condition, characterized by diplopia, homonymous in type. It increases as the test object is moved distalward, and diminishes as it approaches the eyes until a near point is reached, when there is a single vision with orthophoria. The diplopia remains the same in all the fields of fixation. There is no individual muscle paralysis. This condition must be differentiated from bilateral abducens nerve paralysis. In the latter condition there is limitation of motion of both eyes; they cannot move outward beyond the midline.

The following case is of interest because of the mixed type and unusual character:

Case.—N.E.T., robust white male, aged thirty-two, laborer, married and had one child which was sickly; wife's health was good, no miscarriages and no still born children.

Past history was negative, except for syphilis in 1919. At that time patient said he was given a three months' course of treatment, including salvarsan and a course of mercury. Repeated Wassermanns had been negative, according to his statement.

The subjective symptoms were languor, headache and double vision.

Eye symptoms started about three months previously with double vision when looking at distant objects, and increased when he attempted to look to the left or right.

Examination July 16, 1926: Physical findings negative other than increased patella reflexes. Ophthalmic examination revealed: Vision 20/30 o.u. cor-

rected to 20/20 o:u. with a plus 75 cyl. and 90 axis. Fundi and media clear; pupils equal, and reacted to light and accommodation. No nystagmus or corneal sensibility was present. Convergence near point 200 cms. with crossed diplopia. Beyond this distance there was no diplopia in the primary field, but on looking to right or left there was homonymous diplopia. Eyes did not move in outward direction beyond the midline, thus revealing a complete bilateral paralysis of the external recti muscles. Spinal Wassermann was ordered, and reported positive.

This case should be classified as a mixed type, evidently due to syphilis. The sight of the lesion was probably nuclear.

SUMMARY

A routine examination of the eyes is important in all neurological cases. Changes in this organ frequently manifest themselves early in the course of the disease, and at times before any other signs or symptoms are present.

It is well to test not only the visual acuity, but to make a careful examination of the fundi and ocular muscle movements in the six cardinal positions. In this way various ocular muscle anomalies may be readily noted. Lastly, a careful perimetric examination is of untold value.

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Cerebral Tumors and Psychoses

ALFRED GORDON, M.D.

Philadelphia

The special efforts in the field of anatomical and biological investigations contributed considerably to the solution of some psychiatric problems. As examples we may mention: the discovery of spirochetæ in paresis; the distinction of specific senile diseases from those dependent on arterial changes; the discovery of presenile mental states (Altzheimer's disease), the distinction of epilepsy, due to lues, to arteriosclerosis and to encephalitis, from essential epilepsy; the description of some forms of idiocy due to tuberous sclerosis; the discovery of amaurotic family idiocy; the discovery of congenital luetic diseases; the discovery of certain disturbances of development. Furthermore, we are making efforts to find morphological changes in dementia precox, in epilepsy, also changes of finer character in toxiinfectious processes, namely disturbances in the innermost relation of nerve cells and glia, which appear to form a living unity and react jointly to any irritation, to injury or to any other given disorder, and in which alterations take place according to the period of the disease. The brain is only a part of the ensemble, and its diseases are frequently not primary but secondary to invasion of other organs.

The development of clinical psychiatry commenced with the point of view that there is a relationship between mental and somatic diseases, between the psychical and the physical. The modern researches are continuously contributing to such a conception. While it is true that mental diseases are disorders of the brain, it does not always mean that in every case the brain changes must be of a morphological character, but there are reasons to believe that the psychic manifestations are due to or at least are brought out indirectly under the stimulating influence of the more or less fine changes in the brain. All sorts of cerebral alterations, gross, small or fine, may be accompanied by mental disturbances of all varieties, but the already accumulated and the still continuously accumulating evidence point to the conception that local brain changes of any degree or dimension do not act as a primary and unique etiological factor in production of mental disorders. They favor rather the idea that like any other factor, they play the rôle, although not negligible, of an exciting or a stimulating character and consequently they may be considered as an indirect etiological factor in the development of mental disorders. The problem therefore of a possible relationship between mental disorders and anatomical changes in the cerebral tissue is vast and far from being solved. The present study was undertaken with the object to attempt to answer some mooted questions of this difficult problem. It deals with gross organic lesions of the brain which during the patients' lives were associated with psychotic disturbances. It seeks to establish a relationship as a cause and effect or a corresponding parallelism between material diseases of the brain and profound disorders in the mental life manifested in the loss of power of composing and decomposing, of integrating and disintegrating images and thoughts by which mental life is characterized.

Eight cases with autopsies presented somatic symptoms and mental phenomena. The latter were most conspicuous and sometimes overshadowed the focal symptoms to such an extent that the diagnosis of psychoses was maintained for a long time to the exclusion of other possibilities. In the following reports many details of the physical symptoms will be omitted.

Case I.—Dural endothelioma (Mallory's arachnoid fibroblastoma containing a great quantity of fibrillar tissue between the cells) at the base of the brain immediately behind the frontal lobe and involving also the meningeal covering of the latter in the left hemisphere thus compressing the left orbital cortex.

Patient, K. O., female of forty, in whom there developed two years before death headache, dimness of vision in the left eye, also loss of smell on the same side. Ophthalmoscopic examination showed a great fullness of the retinal bloodvessels. There were no localized symptoms referable to the motor apparatus. Six months before she died there was noticed a gradually oncoming weakness of memory particularly for recent events: she would forget what happened only one hour before, what she ate at a previous meal, the days of the week. At times she would become confused so that she would not fully recognize her own people or her children. At times she would become exuberant and express pleasure upon the least attention of her nurse. At other times she would be capricious, impatient and restless. As a constant and continuous symptom there was an olfactory hallucination: she would smell the odor of gasoline in her room. It distressed her considerably as she would smell it even in her food, in the water she drank. Drinking would bring on an attack of vomiting which would be abundant. The odor of gasoline nauseated her. Pneumonia developed and the patient died.

Case II.—A large cystic mass in the left temporal lobe pressing upwards upon the entire left hemisphere, especially in a forward direction, compressing and disfiguring the frontal area and at the base displacing the bulbar region.

M. O'D., male, thirty-nine years of age, presented during a period of sixteen months the usual manifestations of increased intracranial tension: Vertigo, insomnia, headache, and during the first five months of his illness no changes in the ocular fundi could be seen. There were, however, changes in the visual fields, viz., concentric contraction more in the right than in the left eye. There was also considerable bilateral deafness. It was noticed that frequently the patient would become confused and disoriented with regard to space. During those periods, which, however, lasted two or three days, it was impossible for him to find his room in the house, or when he was out for a walk he could not locate the street and the house where he lived. When told to advance in a certain direction, he was unable to do it correctly. At that time the eyegrounds did not show any perceptible changes. He was able to appreciate objects shown. At times the confusional state would be so pronounced that a mild delirious state would appear and then he would have illusions of identity; he would not recognize his sister and would call her by a wrong name; his wife would appear to him as his mother although she was considerably younger than he. Gradually these mental manifestations became less and less frequent, but they never entirely disappeared. During the last two months the patient became childish and this mental puerility remained until his exit; he would laugh like his two small boys; he would handle and caress dolls and toys like them; his remarks about them and the language he used were those of his children.

Case III.—Glioma of the left hemisphere involving the supramarginal gyrus, angular gyrus, the posterior third of the first temporal convolutions compressing and encroaching upon the left frontal lobe.

E. C., male, presented all the general symptoms of intracranial hypertension, viz., bilateral optic neuritis, a history of vomiting in the early phase of the disease, persistent cephalalgia and insomnia. At various intervals there were also present generalized convulsive phenomena. Moreover, there was word blindness and deafness in the left ear. Information obtained showed that the patient passed at first through a period of great restlessness and agitation. At the time of my observations, which lasted six weeks, the following mental picture was present: there was considerable alternation of a joyful attitude and a depressive state. The first would occur when the headache subsided; he was then loquacious, would greet effusively every one who entered his room and at the same time there was a certain childishness in his behavior; he would laugh at trifles, at insignificant remarks; he would burst out laughing at his own expressions. After a brief period of this state he would become morose, would hardly respond to questions, would become angry without provocation. He would not ask for food. The alternating periods of exaltation and depression continued until the last two weeks, when several convulsive seizures occurred in rapid succession, after which profound depression dominated the scene until the patient's death. The alternating mental picture was so striking that a diagnosis of manic depressive psychosis was made by another physician who thereupon advised commitment.

Case IV.—Large cystic mass involving the ascending frontal, ascending parietal, a part of the temporal lobe also the posterior portion of the frontal lobe proper in the right hemisphere.

N. C., male, twenty-eight years old, was suffering from focal epilepsy with convulsions on the left side. The attacks occurred only occasionally. There was also severe headache and a double optic neuritis. There was apathy; disinterestedness was conspicuous even when the patient's headache was at its minimum. At the same time his judgment on most elementary subjects became defective, particularly with regard to propriety and conventional rules. He soon became profane in his language and comportment; he would masturbate and exhibit himself in the presence of his own family. He became irritable, quarrelsome, and on many occasions would attempt to attack. This total change of character and disposition, which formerly were most agreeable, remained unaltered until his death which took place in an attack of convulsions.

Case V.—Two cystic cavities in right frontal lobe.

N. D., aged fifty, presented a mild left hemiplegia, double optic neuritis, occasional attacks of convulsive seizures in the right arm and leg, occasional attacks of severe headache. The mental symptoms were euphoria with unusually clever repartees persisting until the end. This attitude was interrupted by a short period of a stuporous and confusional state following a convulsive attack; the duration of this state was unusually long, viz., seventeen days, and while under its influence there were hallucinatory episodes of several hours' duration and of an auditory character. The patient died subsequently in one of the convulsive attacks.

Case VI.—Cystic cavity with hemorrhage in the right prefrontal lobe.

A. C., male, forty-three years old, music teacher, gave a previous history of severe headache with a right hemiparesis. The mental manifestations predominated throughout the entire illness which lasted sixteen months. Euphoria of a pronounced character interrupted by phases of disorientation were the chief features. The latter manifestation occurred only at intervals, would last from seven to ten days, and had reference to space and time: the patient would frequently think he was in a strange house, that he was on the third floor: "he would consider himself living in the sixteenth century" and he feared the inquisition. This condition would subside gradually and then disappear. The patient reentered the former state of euphoria which was pronounced and associated with a certain degree of mental puerility; childishness in acting, feeling and thinking was in evidence and this continued until pneumonia developed from which he died in a short time.

Case VII.—Sarcoma between the frontal and temporal lobes in the left hemisphere.

D. K., thirty-nine years of age, presented a previous history of severe headache with double optic neuritis and one temporary attack of motor aphasia. During a period of eleven months before his death patient had frequent outbreaks of a maniacal character. Boisterous, speaking loudly of his accomplishments, of his great abilities, restless, impatient and at times aggressive he would frequently become distinctly delusive with persecutory tendencies. The delusions were of a fixed character, they were systematized and directed against certain personalities, and they were accompanied frequently by visual hallucinations. During the delusive periods the intensity of the ideas, the great aggressiveness accompanied by actual threats were so striking that he was considered by some psychiatrists as suffering from typical paranoia. However, prolonged observation revealed the fact that these were only temporary phenomena, although repeated, between which depression would set in and there would be no trace of these manifestations. At one time the possibility of paresis was considered in view of the presence of small pupils, increased reflexes with an occasional extensor plantar reflex on the right side and the thick and heavy pronunciation of words. Patient contracted typhoid fever in the course of which he died.

Case VIII.—A cystic tumor with hemorrhage in the right frontal lobe.

G. S., male, forty-five years of age, presented for a long time paroxysms of severe headache with vomiting, also a mild left hemiplegia with slight attacks of subjective sensory phenomena on the same side, very brief in duration and without loss of consciousness. There was also optic neuritis on one side.

The mental phenomena consisted chiefly of alternating brief periods of exaltation and depression. In the first there was a very marked euphoria, in the second profound apathy during which the patient would be almost totally mute, would only occasionally utter indistinct words. In the intervals the patient showed the attitude and behavior of a child; would laugh at the least remark, would speak of small matters, of facts which occurred in his childhood, describing them and laying emphasis on occurrences which could interest only a child. Towards the end of his life his memory became markedly defective and he frequently would pass through phases of confusion with disorientation in space. The patient died suddenly.

SUMMARY OF THE MENTAL PHENOMENA IN THE EIGHT CASES

1. Euphoria was present in five cases. It figured as a maniacal manifestation in those cases which resembled the syndrome of the manic depressive psychosis. 2. Depression was present in five cases. Like the euphoria it was present in those cases which resembled manic depressive psychoses. 3. Alternating phases of depression and exaltation were present in two cases. 4. Puerilism was present in four cases. 5. Disorientation with confusion was observed in five out of eight cases. The largest majority of the cases therefore presented the manifestations of euphoria and disorientation accompanying confusion. Puerilism was next in frequency. In only one case the paranoid symptom group was in evidence.

Analysis of the individual manifestations presents the following peculiarities. The phases of exaltation and depression strongly resemble those of the manic depressive psychosis but a closer observation showed that in the first phase there was invariably a state of mental puerilism which is ordinarily not observed in the classical psychosis. The puerilism was evident in speech, behavior and in the relation to everyone who came in contact with the patient. The exaltation was associated with a sarcastic state of mind; the ironical remarks did not lack in intelligence; on the contrary it was at times very subtle; it did not possess the pretentious, ridiculous and absurd character which is observed in cases of paresis, neither did it present the indefatigable picture of the maniacal attitude. The depressive phase was not that in which indifference, apathy and abandon figure so prominently in the classical psychosis. In the present series of cases the patients were morose, would hardly respond to questions and would show outbursts of extreme anger even without provocation. Sometimes each of the phases would be accompanied by a certain amount of confusion which again is not observed in the classical psychosis. The socalled depressive state which at first was only intermittent or occasional gradually became more persistent probably because of the progressive increase of cerebral hypertension when the mental and effective activities became gradually extinguished and the automatic activity alone remained: one witnessed a gradual loss of interest, a gradual slowing up of judgment and of the power of perception, a genuine inertia which of course ran parallel with the motor inertia. The maniacal phase was sometimes accompanied by a distinct impairment of the mnemonic faculties which again is not the case in the typical manic depressive psychosis. It is singular to observe that in some cases the impairment of memory was not continuous through the largest period of the illness: at times events would be recalled with great facility, at others there would be almost total amnesia for old events, and still at others only for recent events, and in some cases for both recent and old occurrences. In the latter case the clinical picture resembled dementia. In such cases paretic dementia was not rarely thought of especially when

there was an association of tremor, changes in fundi oculorum and a history of brief attacks of convulsive seizures. Two of the patients were musicians. When the memory would become affected there would be also an involvement of the musical faculty. The periods of memory involvement strikingly affected all sorts of events and in attempts to recall those of youth or of childhood the patients exhibited a hard and painful struggle with themselves, omitting important details, talking very slowly, and deliberately. At no time, however, was there any tendency to confabulation such as is observed in Korsakoff's psychosis. There is another distinctive feature worth mentioning: The alternating phases of exuberance and depression were not constant; they would appear at different times in the course of the disease and for very brief periods, and in the intervals between the latter other mental manifestations would be in evidence.

The puerilism mentioned above which was found frequently in my series was rendered striking by the infantile character of the patients' replies, by the intonation of the voice, by the mimicry, by the childish interest in things childish, by the impatience and obstinacy typical of children in their motives and desires. Puerilism was associated with the exuberant phase and in some cases it was an independent phenomenon. It was not a manifestation of confabulation of the Korsakoff type nor of a delusional state nor of dementia. Besides, it would disappear completely and reappear repeatedly. It was only towards the termination of the disease when the intracranial hypertension reached its maximum, when cerebral inhibition was more and more profound and judgment and perception showed progressive increase of inhibition, that the puerilism, when present, would form one of the phenomena of a demented state.

Another frequent manifestation was disorientation. The latter affected space and time. It is to be observed that this phenomenon was not constant in the course of the original disease; it would be associated mostly with a confusional state which by itself was only temporary although it occurred repeatedly. In the intervals careful investigations were made with regard to the nature of the disorientation. All elements normally connected with the appreciation of space were examined as far as it was possible. Vision, ocular movements, and fixation, superficial and deep sensibilities, the condition of the labyrinth, the auditory apparatus, otherwise speaking, all factors which participate in kinesthetic coordination and orientation in normal life—were all found intact.

Evidently the disorder in the orientation was due to the patient's failure to integrate automatically all kinesthetic perceptions, and in view of the fact that the disorientation was closely associated with the confusional phases and was absent in the intervals, it is to be presumed that the inability to integrate and the resultant disorder in the dynamic conception of bodily displacement was of a purely psychic character, a fact which is so frequently observed in psychoses.

The foregoing analysis of individual manifestations shows that each and all while resembling those usually encountered in the course of psychoses, nevertheless are wanting in the typical features of the latter. Moreover, the most striking characteristics are found in the fact that in all the cases the individual psychotic phenomena, although repeated, were only temporary and transient, in the intervals of which the patients were lucid. We observed it not only in the cases cited, but also in Case VII in which the patient presented a paranoid syndrome with all its typical symptoms.

Case IV resembled for many months cases of dementia precox. Manic depressive psychosis, primary confusional insanity, paresis, mental deficiency were all affections simulated in the cases under discussion. All the eight cases presented this peculiarity that at any given time the mental phenomena were so predominant that they led to errors of diagnoses. They were considered as examples of pure psychoses until the time when the physical characteristics became more and more conspicuous.

Let us now attempt to trace, if possible, a relationship between the psychic manifestations and the destructive states of certain areas of the cerebrum. In Case I temporary but mild confusional states with involvement of memory, temporary exuberance, capriciousness and olfactory hallucinatory phenomena were all associated with an endothelioma at the base of the frontal lobe. In Case II marked confusional states with disorientation and puerilism were associated with a large cyst in the temporal lobe pressing forward against the frontal lobe. In Case III manic depressive manifestations with puerilism were associated with a large glioma which destroyed the angular gyrus and temporal lobe encroaching upon and compressing the frontal area. In Case IV, depression and modification of character and of behavior were associated with a large cystic mass affecting the two ascending convolutions, the temporal and posterior portion of the frontal. In Case V manic depressive manifestations with a pronounced euphoric phase, with temporary confusion and disorientation were associated with two cystic cavities in the frontal lobe. In Case VI manic depressive manifestations with pronounced euphoric phases, also temporary confusional states with disorientation and puerility were associated with a hemorrhagic cyst in the frontal area. In Case VII outbreaks of a condition with temporary paranoid states were associated with a sarcoma lying between the frontal and temporal lobes. In Case VIII manic depressive manifestations with a pronounced euphoric phase, puerility, also confusional periods with disorientation were associated with a large hemorrhagic cyst in the frontal lobe.

It seems, therefore, that the frontal and temporal lobes were particularly involved when manic depressive manifestations were present. When the frontal lobe alone was frankly and grossly involved the maniacal phase with euphoric tendencies was especially conspicuous. Confusion with accompanying disorientation was present when the frontal lobe was only distantly pressed upon. Psychic puerility was also present mostly in the gross and direct involvement of the frontal lobe. The same may be said of the disturbances of memory. The one delusional state (paranoid) was also present in the case of a gross involvement of the frontal lobe, in which the sarcomatous tumor inserted between the temporal and frontal lobes compressed considerably more the latter than the first. In all cases the frontal lobe was more or less invaded.

As to the mental manifestations themselves, we

find in the present series of eight cases a great variety simulating more or less strongly the classical psychoses. In August, 1914, I published a case (1) of sarcoma of the basal ganglia and the patient during life presented an almost typical picture of paresis. This neoplasm was of such a size as to produce considerable pressure on the anterior portion of the brain thus involving the frontal lobe. The symptom group of senile dementia is not rarely met with in cerebral tumors. Constantini has recently published such a case; a patient of seventy-two presented all the typical symptoms and at autopsy a tumor was found in the left prefrontal lobe. The same author (2) in recording other cases lays special emphasis on the occurrence of mental disorders in a simultaneous involvement of the frontal and temporal areas of the brain. Shuster (3) after an extensive study of 775 cases is inclined to believe in a certain relationship between the type of mental disorder and the seat of the neoplasm. The cases published here seem to favor such a view. It appears that the organic invasion of the cerebral substance which contains the motor and sensory speech centres is particularly apt to disturb seriously the mental operations. The study of all cases indicates also the possibility of graver mental disturbances such as maniacal, euphoric or else depressive states, psychic puerilism, perversion of mnemonic faculties, delusional conceptions, phenomena suggesting dementia precox—all associated with gross and direct lesions of the frontal lobe. On the other hand less profound mental manifestations are met with in cerebral lesions (tumors, etc.) of other areas but sufficiently extensive to invade to a lesser degree the frontal area.

So far the present study and that of other writers with positive findings may claim a certain relationship between the destructive lesions of the brain substance and certain mental phenomena resembling those encountered in psychoses, also between the character of the psychic disorder and the localization of the organic lesion.

When one looks for a pathogenetic explanation, one may think of absorption of toxic elements originating in the tumor by the venous and lymphatic circulation; one may also consider a secondary infectious process which develops around the tumor and produces an inflammation in the meninges, in the ventricles. The analogy between the clinical piciture of uremic encephalopathy and that of cerebral neoplasm is striking.

Besides extraneural toxemias other factors have been considered in all such cases. In a recent contribution J. F. Bateman (4) presents the material of 666 brains from insane individuals in which closures of the foramina of Luschka were 11.6 per cent. In all such brains there were found atrophies, lesions, softening and general loss of brain substance. By obstruction of foramina which interferes with the normal flow of cerebrospinal fluid waste products are allowed to accumulate. This circumstance together with insufficient nutrition of brain cells from a deficient blood supply in tumors produce progressive degenerative changes and a loss of mental faculties.

Autointoxication, secondary infection, irritation from intracranial hypertension may explain the presence of many mental manifestations, but do not interpret the development of the psychotic phenomena in the course of brain tumors such as we find in genuine psychoses. The fact that there are cases of cerebral tumors without psychotic disturbances, the fact that in the positive cases those disturbances were transient and temporary and that a close analysis of the mental phenomena showed some differences from those encountered in genuine psychoses—all those circumstances do not permit to accept a close or an intimate relationship. Nevertheless one cannot abandon the possibility of some relationship as seen in the present series of cases as well as in the records of other observers. It is true that the clinical pictures of psychoses in cerebral tumors are not complete and their characteristic features are not mathematically identical with those of the classical psychoses, nevertheless the resemblance between the two is very strong and generally speaking the individual phases are correctly reproduced.

In reviewing the present series of cases as well as those reported by many others there is an inclination for incriminating the frontal lobes. It was mentioned above that in direct and gross involvement of these portions of the cerebrum the mental phenomena simulating psychoses were more conspicuous and more profound than in cases where the frontal area was involved indirectly, such as in pressure from a distance. Forms of high grade dementia are reported by Curti (5) in neoplasms of the anterior fossæ. Similar cases are reported by Richter (6), by Gans (7), by Marie et Benoist (8), by Arvedo (9). Symptoms similar to those of paresis were observed in tumors of the frontal lobes by Bernhardt and Borchardt (10), by Sullivan (11), by Van Gehuchten (12), by Witney (13), by Rosenheck (14), by A. Gordon (15).

The corpus callosum by virtue of the ample connections which it establishes between both frontal lobes, could be considered as an integral part of the frontal brain, so that lesions of the former cause about the same symptoms as those of the latter. The statistics of H. di Gaspero (16) show that psychic disturbances occur more frequently in tumors of corpus callosum than in any other part of the brain; the temporal, parietal, and occipital tumors follow in order. The World War has supplied some material in this direction; persons with frontal brain injuries showed greater mental defect than those with lesions in other parts of the cerebrum. Bayerthal (17) gives a good account of such occurrences. If we add the experimental observations on animals and those of comparative anatomy, it becomes evident that the frontal brain possesses a prevailing psychic significance (See also the article of J. Donath). All such studies while they do not settle definitely the question whether the frontal lobes form a special centre for psychic functions, nevertheless they suggest the possibility of their possessing the power to coordinate the psychic functions more than any other portion of the cerebrum.

CONCLUSION

The present study does not permit me to draw strictly definite conclusions, but it appears highly suggestive in a certain sense of relationship or of interdependence between the psychotic manifestations and the destructive lesions within the cerebrum associated with or caused by neoplasms, more pronounced when the frontal brain is invaded. On the other hand in view of the fact that some tumors of

the brain are not accompanied by psychotic disturbances, one is justified in assuming that this relationship or interdependence is not absolute, and could therefore be considered only as a secondary etiological or pathogenetic element. A further analysis of this problem leads to further conclusions, namely that the fundamental disorder lies originally in psychogenic disturbances of the individual who under the influence of a morbid character, organic or functional, somatic or psychic, is inevitably prepared or potentially ready to break down and present at any time a picture of psychotic phenomena. The destruction of cerebral tissue in tumors and the accompanying intracranial tension which leads to the circulatory changes and the consequent nutritional disturbances of the cortical cells, the possible secondary inflammatory changes in the meninges, the possible accumulation of waste products within the cerebrum, finally, and perhaps the most important, functional changes in the great centres, especially in the frontal brain—all these factors conjointly or individually very probably play a secondary rôle, or are but exciting causes in the development of psychoses in the course of cerebral lesions, notably in cases of neoplasms. The variations in the clinical pictures, disappearance and reappearance of individual phases, or their substitution by different psychic phenomena—all of which render the clinical course irregular and incomplete and thus show a striking difference in the course of the diseases between psychoses associated with cerebral tumors and the classical psychoses—are still further in favor of the above view, namely they demonstrate the fact that the underlying psychogenic morbidity is constantly being disturbed by progressive cellular, arterial, meningeal and metabolic alterations which are bound to take place in the course of an organic disease of an inevitably progressive course. In the latter seems to me lies the strongest proof of the above pathogenetic view. Psychogenic disturbances are fundamental; basic brain lesions even of a gross character are only contributory in the development of psychoses.

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Encephalitis: Atypical Modes of Onset and Clinical Manifestations

J. ALLEN JACKSON, M.D.
and HORACE V. PIKE, M.D., Sc.D.
Danville, Pa.

The continued and increasing number of cases that are presenting themselves with the residuals of encephalitis is a matter that is assuming larger proportions and at the present time bids fair to become a question of serious moment, not only from a medical but likewise from a sociological aspect, for many of these patients in addition to the purely physical handicap necessitated by this condition and its consequent economic inefficiency, also present definite mental disturbances that result in conduct disorders which render them distinctly antisocial and preclude an adequate environmental adaptation. At the present time the wards in the neurological divisions of general hospitals in the larger cities are filled with these patients, state hospitals for mental diseases are admitting an increasing number with definite psychoses and in some states the setting aside of special wards and the establishment of specific types of occupational therapy with a view of providing vocational training, especially for those under sixteen years of age, who are no longer able to continue their education in the public schools with profit to themselves and any degree of comfort to others, is being seriously contemplated.

Perhaps one of the most serious aspects of this problem is the difficulty of its early recognition and the multiform clinical manifestations which the disease presents, and it is with a view of being of service to the family physician, who in the natural course of events is the man who sees and treats these patients through the prodromal and acute periods of the disease, that the following observations made in connection with patients studied at the Danville State Hospital, both in the wards of the hospital and at its eight mental clinics, are herewith presented:

Apparently this disease is uninfluenced by age, sex, physical or environmental conditions. The patients studied have come from all walks of life, male and female patients have had a fairly equal representation, the extremes of life as well as puberty, adolescence and midadulthood have contributed their quota and the physically fit have succumbed with the weaklings.

Furthermore, it presents no well defined clinical course, its subjective symptoms vary with each individual case, and neurological signs are frequently absent or if present often indefinite and frequently misleading.

Likewise the end results cannot be predicted with any degree of certainty and patients who pass successfully through the acute period of the disease may promptly reveal marked disturbances of mental or physical functioning or apparent complete recovery may be followed by an insidious development of residual symptoms that may not be recognized until after a period of many months has passed, and these later manifestations may be of either a neurological or a psychic nature.

Not only do we find a great variety of clinical manifestations during the acute period of an attack and multiform sequelæ, but the mode of onset of the disease apparently follows no well defined course and may so simulate other conditions as to render diagnosis extremely difficult and often impossible, as may be seen from the following citations of atypical cases.

Case I.—A. J., female, aged eight years. The hereditary factors were negative. Normal birth and development both mental and physical until six and one half years of age, when she suffered a nocturnal convulsion of epileptiform character and which was attributed to gastrointestinal disturbances. Three days later a second convulsion occurred lasting for one hour and which was treated with hot baths and sedatives. During the succeeding four days she appeared quite normal save for a general irritability, anorexia and insomnia. This was followed by a series of ten convulsions occurring within twenty-four hours and the following day a right internal strabismus was observed. Throughout this period there was no elevation of temperature and between convulsions the child was up and about and out of doors, and the condition was diagnosed as epilepsy and treated as such. Subsequent history shows an arrest of mental development with consequent inability to learn in school, the appearance within three months of tremors of hands, pain in both upper and lower extremities and defect of speech. The condition has gradually progressed until at the present time, one and a half years after initial convulsion, all the neurological evidences of Parkinson's syndrome are well developed and psychometric measurements record a mental age of six years and seven months. There have been no further convulsions and blood and spinal fluid Wassermann are negative, as is the blood Wassermann of both parents.

Case II.—L. C., female, aged fifty years, married. First complaint of languor and chilliness, followed in forty-eight hours with aching, tenderness and swelling in the right parotid region which promptly extended to the opposite side. Temperature varied from 100° to 102° and within five days the clinical picture was one of mumps, which ran apparently the usual course and at the end of ten days all local symptoms had subsided. The temperature, however, did not decline and the patient became restless, mentally confused, delirious and finally passed into a condition of somnolence followed by stupor. Coincident with the mental symptoms focal manifestations of cranial nerve involvement occurred including ptosis, partial ophthalmoplegia externa, inequality and irregularity of pupils, left facial palsy and dysphagia. General muscular rigidity was increased, fibrillary tremors of the abdominal and thoracic muscles were present, deep reflexes were diminished and vesical and rectal incontinence were marked. All symptoms referable to irritation of the meninges were absent. Blood Wassermann negative. Spinal fluid negative safe for a slight lymphocytosis. At the end of three months patient began to improve and at the end of six months had completely recovered and at the present time, two and one half years later, shows no residuals of the disease.

Case III.—H. M., male, aged twenty-two years, single, clerk. Habits temperate, always physically well with exception of measles and diphtheria during early childhood, was awakened at night with nausea, vomiting, general abdominal pain which after twelve hours became localized in right iliac region and was accompanied by muscular rigidity and tenderness over the lower right abdominal quadrant. A diagnosis of appendicitis was made and surgical operation advised but refused by the patient who was thereafter treated symptomatically. Forty-eight hours later patient suffered an apparent collapse which passed into a condition of somnolence, stupor, and finally semicoma which extended over a period of six weeks after which he gradually convalesced and was able to get about and out of doors. He failed, however, to regain his former strength and at this time a slight ptosis and external strabismus of right eye were first observed. Six months later the syndrome of multiple sclerosis was definitely established in which horizontal nystagmus, dysarthria, intention tremors and incoordination of upper extremities, spasticity of lower extremities, increase of deep reflexes, positive Babinski sign and emotional instability were prominent. Blood and spinal fluid Wassermann negative.

Case IV.—L. B., male, aged thirty-one years, married, miner, habits temperate. Four years ago patient suffered an acute illness which confined him to bed for a period of six weeks and the condition was diagnosed and treated as typhoid fever. During the third and fourth week of the disease he manifested a maniacal delirium alternating with a condition of stupor. No neurological signs of organic brain or cord lesion were observed and patient made an uneventful convalescence. He returned to his work but appeared mentally dull and complained of pain and weakness of the lower extremities. Within two months he exhibited a marked change in disposition, displayed episodes of irritability and impulsiveness resembling psychic epileptic equivalents. He was forced to abandon his work and remained at home becoming emotionally depressed and at times hallucinated. The face became flushed, saliva began to escape from right side of mouth, tremors of the right hand appeared and progressively extended to the arm, head, left hand and arm and finally lower extremities accompanied by stiffness, rigidity and disturbance of equilibrum. Two years after the supposed typhoid fever all the signs of paralysis agitans were present and at the present time patient is practically bedridden and helpless.

Case V.—A. G., female, aged thirty-two years, married. Has given birth to two children. Has had no miscarriages and always been physically well. The youngest child is two years of age and at its birth during which labor was prolonged over a period of three days she was attended by a midwife. Five days after delivery there developed a general septicemia

from which she apparently recovered after several weeks. A few months later she experienced difficulty in walking, tremors appeared in both upper extremities, gradually she became mentally dull, emotionally depressed, at times confused to the extent that she would wander from home. Auditory hallucinations became prominent and an attempt at suicide led to her commitment to the hospital, where examination revealed a well advanced condition of paralysis agitans.

Case VI.—E. K., male, aged fourteen years, schoolboy, heredity good. Patient alert, good student and physically well save for frequent attacks of tonsillitis. On advice of physicians, tonsillectomy was performed. One week subsequent to operation and while throat was still unhealed patient complained of diplopia, headache and vertigo, temperature rose to 102° and forty-eight hours later a severe convulsion was followed by ptosis of right eyelid, nystagmoid movements and paralysis of right side of face. There was no stupor or delirium, temperature gradually declined and at the end of six weeks paralysis had practically disappeared. He returned to school but was unable to make further progress, marked conduct disorders developed and his delinquent tendencies led to his exclusion from the public schools and a year later to commitment to a state institution.

CONCLUSIONS

1. The organism of encephalitis may reach the central nervous system through many and varied channels.
2. Encephalitis in its mode of onset may simulate various other conditions to the extent of completely masking the disease.
3. Neurological signs may be completely absent or so slight as to escape detection throughout the acute period of the disease and only by its sequelæ be finally recognized.
4. All acute, general infectious diseases should be carefully studied from the neurological viewpoint with the possibility of encephalitis continually in mind.

The Serology of General Paresis in the Malaria Treated Cases

ARMANDO FERRARO, M.D.
and THEODORE C. C. FONG, M.D.
St. Elizabeth's Hospital, Washington, D. C.

The new era opened to the treatment of general paresis by the Wagner von Jauregg malaria treatment has already permitted M. Nonne (1), who for the past thirty-five years has been interested in the treatment of general paresis, to affirm that "the axiom of the incurability of general paresis can be now considered as untenable." What Nonne said in regard to the curability of paresis might also be said of the serology. Cases were known in which the serology, following intense specific treatment, showed evident improvement or even eventually recovery, but such cases, especially those reaching the degree of serological recovery, were rare. No later than 1920 Haguenau (2) in France who extensively studied the humoral syndrome of general paresis could still speak of the irreversibility of the serology by any kind of treatment; he considered this irreversibility as the feature differentiating paresis from other forms of syphilis of the nervous system.

In 1922 Rene Targowla (3) almost arrived at the same conclusion although he was less dogmatic as to the possibility of a certain reversibility especially in spontaneous remission periods, and in cases of atypical paresis. And very recently at a monthly meeting of the Neurological Society of Philadelphia Dr. Strecker asked if there were cases of general paresis on record with a negative serology.

The really great modification in our old conceptions concerning the serology of general paresis has grown up with the now widespread practice of malaria inoculation. The influence of such treatment on the serology has been hitherto neglected presumably because of the short time that malaria inoculation has been in use. As a matter of fact, Wagner von Jauregg (4) himself not later than 1922 expressed the opinion that "the malarial treatment has only a negligible influence upon the serum and fluid reactions and only in a few cases could there be established an influence worth mentioning on these reactions."

With the extension of the new method of treatment, observations on the serological reactions grew in importance and fixed the special attention of some investigators. However, curiously enough, from the same clinic as that of Wagner von Jauregg, Gerstmann (5) issued a paper in 1922 in which the serological modifications in a first series of 116 cases were reported. Gerstmann found that in cases with complete remissions there was an improvement of the Wassermann reaction of the blood, in 25.8 per cent. of the cases. The Wassermann of the spinal fluid was improved in 48.4 per cent. of the cases, the lymphocytosis in 87.1 per cent., the globulin in 46.6 per cent., and the albumin content in 77.4 per cent. In cases with partial remissions there was an improvement of the blood Wassermann in forty per cent. while the spinal reactions were improved as indicated by the following percentages: Wassermann 43.9 per cent., lymphocytosis 93.6 per cent., globulin 59.5 per cent., albumin 75 per cent. In some of the cases the Wassermann reaction became negative both in the serum and the spinal fluid in the following proportions. Cases with incomplete remissions: negative blood Wassermann 6.45 per cent.; negative spinal fluid Wassermann 12.9 per cent. Cases with complete remissions: negative blood Wassermann 13.3 per cent.; negative spinal fluid Wassermann 13.3 per cent.

The following year Weygandt (6) referring to some of the previous results obtained in his clinic in

Hamburg which were worked up by Kaltenbach, mentions the fact that of twenty-seven cases treated with malaria twenty showed an evident reduction of the three most important fluid reactions. Some favorable results were reported by Kaltenbach and Kirschbaum (7) who found an evident improvement of the cerebrospinal fluid following the above mentioned treatment. Ilse Graf (8) of Leipzig mentions an improvement in the serology, especially in the pleocytosis as well as in the Wassermann reaction which in one instance became negative in the cerebrospinal fluid.

However, contradictory results were reported by McAllister (9) who expressed himself in the following way: "At the moment the results on the serology are again being investigated, and so far as this has been done, Wagner von Jauregg's conclusion that the conditions of the blood serum and cerebrospinal fluid are not noticeably altered by the malaria infection, has been confirmed." It must be pointed out, however, that from the time of the malaria inoculation to the time of the publication of his article only seven months had elapsed.

According to Nonne, the pleocytosis is the element most influenced, while the globulin content improves and in some instances reaches negativity. The same favorable influence on the cytology, as well as on the albumen and protein content, was found by Peter and Reese (10). Besides, they found occasional improvement and even negativity in the cerebrospinal Wassermann.

In 1924, J. Purves Stewart (11) reported that in no instance was he able to find in the literature cases treated by malaria in which the cerebrospinal fluid returned to normal. On the contrary, he says, the characteristic pleocytosis and positive Wassermann reaction are observed to persist practically unchanged, despite the improvement in the clinical symptoms. We cannot quite agree with this statement as we have already mentioned the serological results reported by some authors as regards the pleocytosis as well as the Wassermann reaction showing a gradual tendency to return to normal. Positive results in the sense of serological improvements are also reported by Kirby and Bunker (12), and Grant and Silverston (13). The latter in a series of forty treated cases found that in every case there was some alteration following treatment, either in the fluid or the serum or in both. The earliest signs of improvement were manifested by a diminished lymphocytosis and lowered globulin content of the cerebrospinal fluid and by a reduction in the intensity of the blood Wassermann reaction. The Wassermann reaction of the cerebrospinal fluid and the colloidal gold were favorably influenced during a somewhat later period of treatment. Negative Wassermann reactions were obtained in the cerebrospinal fluid and in the blood in fifteen per cent. and 7.5 per cent. of the respective series. In two cases or five per cent. the liquor and Wassermann reactions were concurrently negative.

In a later article, Weygandt (14) states that the pleocytosis rapidly improves, and also very often the globulin content, and that the Wassermann reaction in both the serum and cerebrospinal fluid could become negative following treatment. Mingazzini, however, although agreeing as to the improvement in the lymphocytosis and in the albumin and globulin content, could not confirm the improvement of the Wassermann reaction of the cerebrospinal fluid. Sagel (15) and Bering (16) reported cases showing a very great improvement, and the latter author had cases showing complete serological recovery. Such a recovery was found in two cases by Charlotte Jacob (17) and in one case by Runge (18). Kirby (19) also reports a case with negative Wassermann reaction of the cerebrospinal fluid following the malaria treatment, while seventy-five per cent. of the treated cases were serologically improved. Eldridge (20) *et al* of Saint Elizabeth's Hospital in their article briefly reported serological improvement following malarial inoculation.

N. D. C. Lewis (21) reporting the earlier results of the first series of the malaria treated cases at Saint Elizabeth's Hospital also found that seventy-five per cent. of the treated cases showed serological improvement, and in one case he was able to get a negative Wassermann on the spinal fluid. In the discussion that followed the reading of his paper, Lewis added: "When I say serology became negative I mean that the Wassermann and the other reactions in the blood and spinal fluid became inactive or perhaps one might in some instances term the reactions very atypical. There are some changes still demonstrable in the spinal fluid which I presume indicate the patient will some time die of general paresis, but I think, as has been suggested, we have something here worth further experimentation to see what will happen."

According to the data of U. Fleck (22), the percentage of serological improvements following the malaria treatment is given as 30.8 per cent. for the blood Wassermann and 57.2 per cent. for the cerebrospinal fluid Wassermann. The data of B. Kihn (23) are, however, much less optimistic as the author mentions a consistent improvement in only ten per cent. of the cases and in no case did he see a complete negative cerebrospinal fluid. A. Wizel and L. Prussak (24) referring to the results of the serological changes, in the eleven improved cases of their series, mention that the pleocytosis disappeared entirely in three cases and diminished very greatly in three others. The Nonne and Apelt reaction (phase 1) became negative in four cases. The Wassermann reaction improved in five cases and became negative in four. The Wassermann reaction of the cerebrospinal fluid improved very much in four cases and slightly in another.

Bunker and Kirby (25) consider positive spinal fluid findings tend to become more or less slowly modified in the course of six months to a year or more subsequent to the treatment; that the cell count is the most quickly and easily affected and the Wassermann reaction is the most resistant while the colloidal gold curve becomes very slowly but eventually modified in the majority of instances and the globulin, although quickly reduced, as a rule becomes negative very slowly and only in a certain proportion of cases. The Wassermann reaction in the spinal fluid must be considered the most refractory feature of the total picture in the sense that although it undergoes some reduction more or less immediately, it seldom becomes completely negative. Their most usual experience has been that even at the end of a year or longer the reaction is still present (from two plus to four plus) in one c. c. of spinal fluid though negative in 0.5 c. c.

However, in their series of fifty-three cases, the Wassermann reaction of the cerebrospinal fluid was found negative twice out of twenty-nine following three months of the treatment, three times out of nineteen after six months and once out of five after one year.

Solomon and Berk (26), although finding serological modifications in malaria treated cases, cannot say much about the effect of malaria on the serology because they have been following the malaria treatment by tryparsamide, so that the changes, according to their views, may have been caused by agents other than the malaria. As a result of his experience, M. Graham (27) found that serologically the results were not very obvious, but he admits that a further examination is advisable in order to determine more accurately the value of the treatment.

At the seventeenth meeting of the Italian Society of Psychiatry, Pisani (28) reported that in the great majority of the cases following the malaria treatment the single components of the cerebrospinal fluid show a tendency to improve even in the absence of a corresponding clinical improvement and even in cases showing eventually a tendency towards aggravation. In cases showing clinical improvement the fluid has a definite tendency to recover and sometimes may become entirely normal. In some of the cases unchanged clinically, as well as in those which became worse, a trend is noticed towards regression and the fluid reactions may revert to their previous pathological condition. The pleocytosis diminishes at the outset while the decrease in globulin follows a slower course than the colloidal reactions. The Wassermann reaction persists for a long time and, as a rule, improvement only is noticeable. In a few cases, however, in the years following the malaria inoculation the Wassermann may become negative.

Recently Gerstmann (5), in his detailed work on the malaria treatment of general paresis, dedicated a special chapter to the serological modification confirming what he already mentioned in his previous paper that, in the majority of the cases, there is a rapid improvement of the inflammatory reactions (lymphocytosis, albuminosis) while the Wassermann reaction and the globulin content do not improve for several months or even several years after the malaria treatment.

H. Claude and Targowla (30) nine months after the malaria inoculation of their patients find that the serological changes are of little importance and sometimes no changes are noticed. However, the lymphocytosis and the hyperalbuminosis are often improved while the colloidal reactions are very little modified and the Wassermann becomes partially positive. The same resistance of the Wassermann and colloidal reactions are reported by W. York (31). From the data collected by E. Nicolle and P. Steel (32), a serological improvement is seen in fifty per cent. of the treated cases if a serological examination is made at a sufficiently long interval after the malaria treatment.

Finally pessimistic results are reported by Bouman (33) and by Grimme (34), who, out of thirty-six cases treated, found only one with complete recovery of the blood and spinal fluid, while in the remaining cases they noticed no changes.

The serological modifications in the cases treated by malaria have also been studied by some of the investigators from the standpoint of the relationships between the serological and clinical improvement. Gerstmann (35) was among the first to establish a lack of parallelism between these two sides of the pathological picture, but recently he appears somewhat less affirmative as he establishes a division between the early and the later changes following malaria treatment. This author finds that when a long period of time has elapsed after the malaria treatment the discordance between the clinical and serological changes, so striking in the early stages, gradually disappears.

Weygandt believes that a certain parallelism does exist between the serological and clinical changes although they are not definite, while, on the other hand, a lack of parallelism is reported by Templeton (36), Kirshbaum and Kaltenbach (7): *"Zwischen Veränderungen im klinischen Bild und den Veränderungen der Reaktionen in Liquor kein Parallelismus besteht."* The same results are reported by Reese and Peter (10) and McBride (37). In the same direction, Kirby and Bunker (25) quote some of their cases where they found complete reduction of the Wassermann reaction and flattening of the colloidal gold curve without any corresponding mental improvement. On the other hand, cases clinically improved while the serology still showed definite changes are reported by Sagel (15), Bering (16), and Fleck (22). The lack of parallelism is also confirmed by N. D. C. Lewis (21) and in a later article by Kirby and Bunker, as well as by W. York (31).

Mingazzini (38) and his pupil Pisani (28) are inclined to accept a certain parallelism, at least in a general way, as they found that the serology becomes worse in the cases showing an unfavorable course.

The serological results following malaria treatment have also been investigated by some authors from the standpoint of their prognostic value. Wagner von Jauregg (4) himself denied such a value while Potzl and O. Fischer have attributed a prognostic value to the Kafka hemolysin reaction. Kaltenbach (39) believes, on the other hand, that the best prognostic value should be attributed to the mastic reaction (Kafka modification) which in favorable cases changes its paretic curve into a syphilitic one. Other authors are very skeptical on this point and U. Fleck (22), for instance, asks for further investigations of the subject, while York points out that from the prognostic viewpoint much more importance is to be attached to the clinical manifestations than to alterations of the spinal reactions.

The review of the literature shows us that papers devoted entirely to the study of the serology following malaria treatment are very few, as the majority of writers have given only secondary attention to the subject. This circumstance has stimulated us to consider the question of the serology from a detailed point of view. Another reason for considering this problem as we did is that many authors seem to have neglected the important factor represented by the time element, i. e., the period which elapses between the malaria treatment and the last spinal fluid examined. As a fact, some of the authors have drawn their conclusions by examining fluids taken a few months after the malaria inoculation while some others took into consideration the results of spinal puncture performed a long time after treatment. The differences in the

time element might explain the discrepancies in the results as well as the lack of parallelism between the serological and clinical results.

From the material of this hospital, we have selected for our paper those cases which, due to repeated spinal punctures, enabled us to judge the real extent of the improvement, as well as to predict the eventual course. Table I indicates the number of the cases divided according to the date of the malaria treatment.

TABLE I

NUMBER OF CASES AND DATES OF MALARIA INOCULATION

Year	Jan.	April	May	June	July	Aug.	Oct.	Nov.	Dec.	Total
1922	..	..	..	..	..	..	..	..	2	2
1923	..	15	14	2	8	6	..	..	..	45
1924	..	..	..	..	..	..	8	..	10	18
1925	3	4	..	..	..	..	15	2	1	25
1926	5	..	..	..	..	..	..	..	..	5
									Total	95

The table shows that the oldest cases were treated in December, 1922, while the most recent ones have received the malaria inoculation not later than the past January. Our observations can then be extended to a period of over three years.

Table II is a general prospective view of the serological modifications at different intervals of time following the malaria treatment. The interval of time is based on the last spinal puncture and has been divided into five groups, i. e., within six months, twelve, eighteen, twenty-four and thirty-six months. The data reported in Table II show clearly how the serology gradually improves with the increase of the time which has elapsed after the malaria treatment. Examining now every single component of the serological formula, the following considerations can be set forth.

CEREBROSPINAL FLUID

Wassermann reaction.—Within the first six months twenty of the cases considered, i. e., eighty per cent. of the cases, showed an unchanged reaction while only four cases showed improvement, and only one a negative reaction.

TABLE II

SEROLOGICAL MODIFICATIONS AT DIFFERENT INTERVALS OF TIME FOLLOWING THE MALARIA TREATMENT

Time Intervals	*No. of cases*	*Blood Wassermann*	*Cerebrospinal Fluid — Wassermann*	*Cells*	*Globulin*	*Colloidal gold*
Within 6 months	25					
Unchanged		11	20	8	8	20
Improved		7	4	12	14	5
Negative (1)		7 (2)	1	5	3	0
Within 12 months	14					
Unchanged		3	5	7	4	7
Improved		4	6	3	8	7
Negative		7	3	4	2	0
Within 18 months	20					
Unchanged		3	6	5	8	8
Improved		6	7	10	10	12
Negative		11	7	5	2	0
Within 24 months	11					
Unchanged		0	0	0	5	1
Improved		1	5	6	5	10
Negative		10 (2)	6	5	1	0
Within 36 months	23					
Unchanged		2	2	1	4	3
Improved		1	5	10	12	18
Negative		20	16	12	7	2

(1) For cells, negative signifies normal number.
(2) One case was negative before inoculation.

Within twelve months an improvement is seen in the percentage of the modified cases. As a fact, six of the fourteen cases, that is to say 42.6 per cent., showed improved reaction and three (22.8 per cent.) a negative reaction.

Within twenty-four months the serological modifications are still more striking as all of the eleven cases (one hundred per cent.) showed improvement, six of which (fifty-four per cent.) showed a negative reaction.

Finally within thirty-six months twenty of the twenty-two cases showed improvement (ninety per cent.), sixteen of which (68 per cent.) give a negative reaction.

Cells.—Here the changes are more intense and more rapid as, within the first six months, sixteen of the twenty-five cases (sixty-four per cent.) already show an improvement, with a reversal to the normal in five of the cases. Although the proportion of the improved cases from the cytological point of view is not so high within twelve months, the improvement becomes higher within eighteen months, at which period it reaches seventy-five per cent., and successively within twenty-four and thirty-six months all the treated cases, with the exception of one, showed a marked improvement and fifty per cent. of the cases have reversed to the normal.

Globulin.—The improvement in the globulin content is less marked than for the pleocytosis as the initial improvement often remains stationary for a certain time. However, a slight tendency toward a gradual diminution of the globulin content can be gradually seen, for within eighteen months the improved cases represent sixty per cent. of the total and within thirty-six months the proportion is still higher (81.7 per cent.) while 30.8 per cent. of the cases show a reversal to the normal.

Colloidal gold reaction.—The colloidal gold curve appears to be one of the most resistant, and according to our own data it is even more resistant to treatment than the Wassermann reaction itself. Within the first six months, twenty of the twenty-five cases (eighty per cent.) show no changes in the paretic curve and only twenty per cent. of the cases show an improvement. Within twelve months fifty per cent. of the cases, a proportion higher than for the Wassermann reaction, show still an unchanged curve. It is only within twenty-four months that the proportion of the improved cases increases considerably, ten of the eleven cases showing the improvement mentioned. Finally within thirty-six months 85.5 per cent. of the cases show improvement and a few of them a complete reversal to a normal curve.

Blood Wassermann.—The improvement in the Wassermann reaction of the blood is so rapid that already within six months thirteen cases show improvement, in six of which a negative reaction is obtained. The proportion of the improved cases continues to increase within twelve months and eleven of the fourteen are favorably influenced, seven of which show reversal to the normal. The results are more striking within twenty-four months as in all the cases, with the exception of one, the Wassermann reaction became negative. Within thirty-six months 81.7 per cent. of the cases show a negative blood Wassermann.

As examples of the different series, we give in the following tables some of the cases, with a detailed report of the serological results at different intervals of time. In Table III we have taken into consideration the changes noted within the first thirty days, namely, after six, eight, eleven and twenty days following the appearance of the first chill.

From the results reported in this table, two conclusions are indicated: The first is that the malaria treatment in a very early stage has a favorable influence on the pleocytosis. Six days after the appearance of the chills there is already an appreciable reduction in the number of cells, and in the reported case they fell from 37 to 27 per cubic millimetre. The improvement in this field becomes the more pronounced and a few days later (eight days) shows a reduction from 45 to 18, and after twenty days the number of cells fell to within the normal limits. The pleocytosis it appears then is undoubtedly the first component of the serology to improve after the malaria treatment.

The next consideration is that in the early stages following the malaria treatment some of the reactions tend to become worse rather than better. Some of the authors, as for instance Claude and Targowla, have reported a few cases in which the serology and especially the Wassermann reaction of the serum which was negative before the malaria inoculation, became positive following the treatment. No author has, however, reported this type of changes in such early stages as is here reported by us. In Case IV the Wassermann reaction of the blood, which was moderately positive before the treatment, became strongly positive, and, in addition, the colloidal gold curve which first was 3321100000 became typically paretic, 5554321000. The same might be said for the blood Wassermann in Case V.

Table IV shows the serological changes in a few cases one month after the malaria treatment. From this table the same conclusions are indicated as for the earlier stages. The main change in the serological picture continues to be a very considerable improvement in the pleocytosis.

In Table V the serological modifications six months after the malaria treatment are reported. At this period, besides the striking improvement of the pleocytosis already mentioned in the earlier stages, an improvement also becomes evident in the Wassermann reaction. Case IV is the case reported in Table II which, within six months, showed a negative Wassermann reaction of the cerebrospinal fluid. The globulin content shows also a tendency to a slight improvement. The changes occurring in the colloidal gold curve are too slight to be discussed.

In Table VI it may be seen clearly that the improvement gradually involves all of the components of the serological picture. Out of the fourteen cases, the Wassermann reaction was improved in eleven in the blood and nine in the cerebrospinal fluid. In three of these nine, the reaction became negative in the cerebrospinal fluid. Fifty per cent. of the cases also show improvement of the colloidal gold curve.

Table VII shows the details of the serology in some cases up to eighteen months after the malaria treatment.

During this period the serological modifications are very typical. The blood Wassermann is negative in more than fifty per cent. of the cases and the cerebrospinal fluid Wassermann is very favorably influenced. Seven of the twenty cases show negative reactions of the fluid. The colloidal gold reaction is strongly influenced in some of the cases and sixty per cent. of the cases show general improvement. The pleocytosis gradually improves, many of the cases having a cell count extremely close to the normal. The globulin content also tends to approach the normal in the improved cases.

(To be continued)

TABLE III

Modification of the Serology Within One Month of the Malaria Treatment

Blood				Cerebro Spinal Fluid							
				Wassermann		Globulin		Cells		Colloidal Gold	
Case number	Number of days following the first chill	Wasserman Before treatment	After treatment	Before	After	Before	After	Before	After	Before	After
1	6	4 plus	4 plus	4444	4444	plus	3 plus	37	27	5555432000	55555432100
2	8	4 plus	4 plus	4440	4400	4 plus	4 plus	45	28	45553210000	4433210000
3	11	4 plus	4 plus	4444	4444	4 plus	4 plus	32	10	4555321000	4555432100
4	11	2 plus	4 plus	4444	4444	plus	plus	21	10	3321100000	5443210000
5	20	3 plus	4 plus	4444	4444	0	0	17	2	5555432100	5555432100

TABLE IV

Serological Modifications One Month After the Malaria Treatment

Blood		Cerebrospinal Fluid							
Wassermann		Wassermann		Globulin		Cells		Colloidal Gold	
Before Treatment	After	Before	After	Before	After	Before	After	Before	After
4000	4400	4444	4444	4 plus	4 plus	48	15	5555555442	1555543210
4000	?	4400	4400	4 plus	4 plus	45	18	455555430	5555432100

TABLE V

Serological Modifications Six Months After the Malaria Treatment

Blood			Cerebrospinal Fluid							
			Wassermann		Globulin		Cells		Colloidal Gold	
Case Number	Wassermann Before treatment	After treatment	Before	After	Before	After	Before	After	Before	After
1	0000	0000	4420	4100	4 plus	3 plus	10	5	5555432100	5555321000
2	4400	3100	44430	4441	4 plus	4 plus	60	4	55555321000	5555431000
3	4400	4400	4400	4400	3 plus	3 plus	15	5	5555321000	55555310000
4	4444	0000	4444	0000	4 plus	3 plus	10	11	5554321000	4112321000
5	4400	4400	4444	4443	4 plus	3 plus	8	7	5555553110	5545553110
6	4400	4400	4444	4444	4 plus	plus	162	7	5554321000	5554210000

Historical Medicine

Leonardo Da Vinci, Anatomist and Physiologist

LEOPOLD VACCARO, M.D.
Philadelphia, Pa.

(*Continued from page* 479)

HOW THE BODY OF THE ANIMAL CONTINUALLY DIES AND IS RENEWED

On this physiological topic the physiologist Leonardo says:

"The body of anything whatsoever that receives nourishment continually dies and is continually renewed. For the nourishment cannot enter except in those places where the preceding nourishment is exhausted, and if it is exhausted it no longer has life. Unless therefore you supply nourishment equivalent to that which has departed, the life fails in its vigor; and if you deprive it of this nourishment, the life is completely destroyed. But if you supply it with just so much as is destroyed day by day, then it renews its life just as much as it is consumed; like the light of the candle formed by the nourishment given to it by the fat of the candle, which light is also continually renewed by swiftest succor from beneath, in proportion as the upper part is consumed and dies, and in dying becomes changed from radiant light to murky smoke. And this death extends for so long as the smoke continues; and the period of duration of the smoke is the same as that of what feeds it, and in an instant the whole light dies and is entirely regenerated by the movement of that which nourishes it; and its life receives from it also its ebb and flow, as the flicker of its point serves to show us. The same process also comes to pass in the bodies of the animals by means of the beating of the heart, whereby there is produced a wave of blood in all the veins, and these are continually either enlarging or contracting, because the expansion occurs when they receive the excessive quantity of blood, and the contraction is due to the departure of the excess of blood they have received; and this the beating of the pulse teaches us, when we touch the aforesaid veins with the fingers in any part whatsoever of the living body. But to return to our purpose, I say that the flesh of the animals is made anew by the blood which is continually produced by that which nourishes them, and that this flesh is destroyed and returns by the mesaraic arteries and passes into the intestines, where it putrefies in a foul and fetid death, as they show us in their deposits and steam like the smoke and fire which were given as a comparison." (Windsor MSS. *Dell' Anat.* Fogli B 28 r.)

HOW THE FIVE SENSES ARE THE MINISTERS OF THE SOUL

"The soul apparently resides in the seat of the judgment, and the judgment apparently resides in the place where all the senses meet, which is called the common sense; and if it is not all of it in the body, as many have believed, but is all in this part, it would not have been necessary for the instruments of the senses to come together in concourse to one particular spot; rather would it have sufficed for the eye to register its function of perception on its surface, and not to transmit the images of the things seen to the sense by way of the optic nerves; because the soul—for reasons already given—would comprehend them upon the surface of the eye.

"Similarly, with the sense of hearing, it would be sufficient merely for the voice to resound in the arched recesses of the rocklike bone, which is within the ear, without there being another passage from this bone to the common sense, whereby the said mouth might address itself to the common judgment.

"The sense of smell also is seen to be forced of necessity to have recourse to this same judgment.

"The touch passes through the perforated tendons and is transmitted to this sense; these tendons proceed to spread out with infinite ramifications into the skin which incloses the body's members and the bowels. The perforating tendons carry impulse and sensation to the subject limbs; these tendons passing between the muscles and the sinews dictate to these their movement, and these obey, and in the act of obeying they contract, for the reason that the swelling reduces their length and draws with it the nerves, which are interwoven amid the particles of the limbs, and being spread throughout the extremities of the fingers, they transmit to the sense the impression of what they touch.

"The nerves with their muscles serve the tendons, even as soldiers serve their leaders, and the tendons serve the common sense as the leaders their captain, and this common sense serves the soul as the captain serves his lord.

"So, therefore, the articulation of the bones obeys the nerve, and the nerve the muscle, and the muscle the tendon, and the tendon the common sense, and the common sense is the seat of the soul, and the memory is its monitor, and its faculty of receiving impressions serves as its standard of reference.

"How the sense waits on the soul, and not the soul on the sense, and how where the sense that should minister to the soul is lacking, the soul in such a life lacks conception of the function of this sense as is seen in the case of a mute or one born blind." (Windsor MSS. *Dell' Anat.* Fogli B 2r.)

OF THE MUSCLES WHICH MOVE THE TONGUE

"No member needs so great a number of muscles as the tongue—twenty-four of these being already known apart from the others which I have discovered; and of all the members which are moved by voluntary action this exceeds all the rest in the number of its movements.

"And if you shall say that this is rather the function of the eye, which receives all the infinite varieties of form and color of the objects set before it, and of the smell with its infinite mixture of odours, and

of the ear with its sounds, we may reply that the tongue aso perceives an infinite number of flavors both simple and compounded; but this is not to our purpose, for our intention is to treat only of the particular movement of each member.

"Consider carefully (1) how the movements of the tongue with the help of the lips and teeth, the pronunciation of all the names of things is known to us; and how, by means of this instrument, the simple and compound words of a language arrive at our ears; and how these, if there were a name for all the effects of nature, would approach infinity in number, together with all the countless things which are in action and in the power of nature; and these would not be expressed in one language only, but in a great number of languages and these also would tend to infinite variety, because they vary continually from century to century, and in one country and another, through the intermingling of the peoples, who by wars and chance or deliberate experiments succeeded in creating the smallest thing which can be created by Nature; and indeed this generation deserves unmeasured praises for the serviceableness of the things which have been invented for the use of men, and would deserve them even more if they had not been the inventors of noxious things like poisons and other similar things which destroy the life or the intellect; but they are not exempt from blame in that by much study and experiment they are seeking to create, not, indeed, the meanest of Nature's products but the most excellent, namely gold, which is begotten of the sun, inasmuch as it has more resemblance to it than to anything else that is, and no created thing is more enduring than this gold. It is immune from destruction by fire, which has power over all the rest of created things, reducing them to ashes, glass, or smoke. If, however, insensate avarice should drive you into such terror, why do you not go to the mines

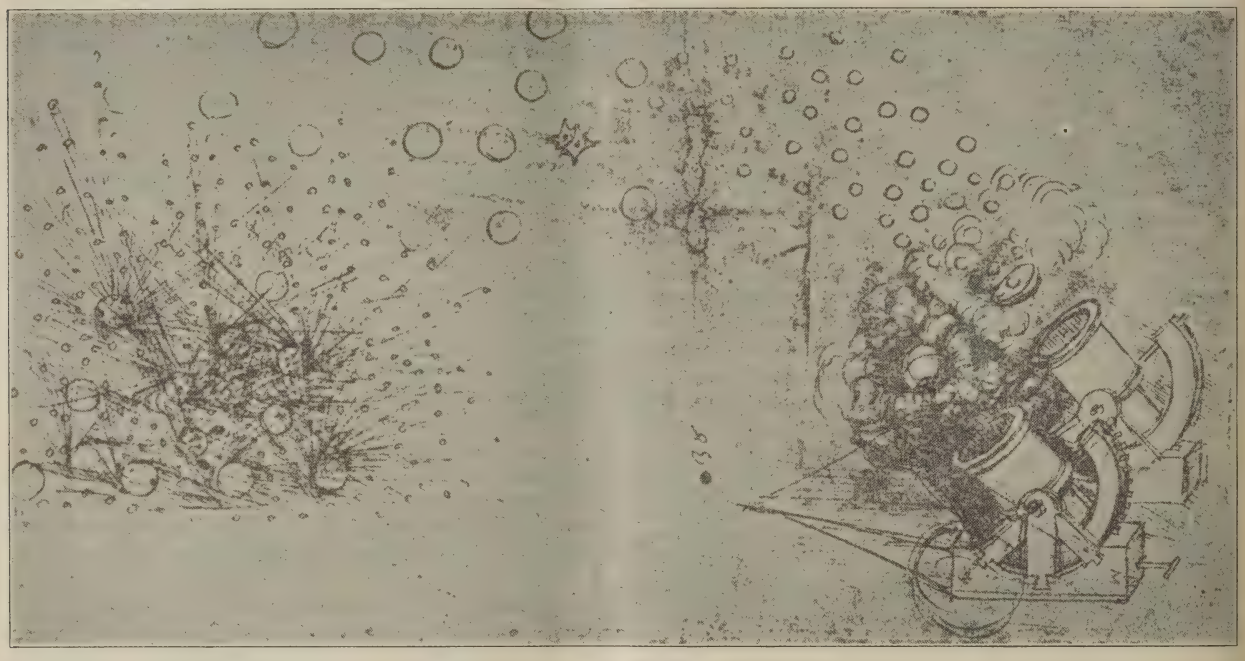

Fig. 5.—Mortar for throwing bombs and shrapnel

other mischances are continually becoming mixed with each other; and these same languages are liable to pass into oblivion, and they are mortal like all the rest of created things; and if we grant that our world is everlasting we shall then say that these languages have been, and still must be, of infinite variety, through the infinite number of centuries which constitute infinite time.

"Nor is this true in the case of any other sense; for these are concerned only with such things as nature is continually producing, and she does not change the ordinary kinds of the things which she creates in the same way that from time to time the things are changed which have been created by man; and indeed man is Nature's chiefest instrument, because Nature is concerned only with the production of elementary things, and man produces an infinite number of compounds, although he has no power to create any natural thing except another like himself, that is, his children. And of this the old alchemists will serve as my witness, who have never either by where Nature produces this gold, and there become her disciple?

"She will completely cure you of your folly by showing you that nothing which you employ in your furnace will be numbered among the things which she employs in order to produce this gold. For there is there no quicksilver, no sulphur of any kind, no fire nor other heat than that of Nature giving life to our world; and she will show you the veins of the gold spreading through the stone—the blue lapis lazuli, whose color is unaffected by the power of the fire. And consider carefully this ramification of the gold, and you will see that the extremities of it are continually expanding in slow movement, transmitting into gold whatever they come in contact with; and note that therein is a living organism which it is not within your power to produce." (Windsor MSS. *Dell' Anat.* Fogli B 28 v.)

Giovanni Papini (7) thus speaks of Leonardo's genius: "It seems as though this man whose father and grandfather had been notaries, were possessed of

an atavistic desire to undertake an inventory of the universe." That passion for detail which had dulled the spirits of so many of his successors had seized him all too firmly. In a certain sense he was a positivist long before the time of positivism. For that reason perhaps, he is held in high esteem by our own scientists. Every now and then one of these gentlemen discovers that Leonardo was the founder

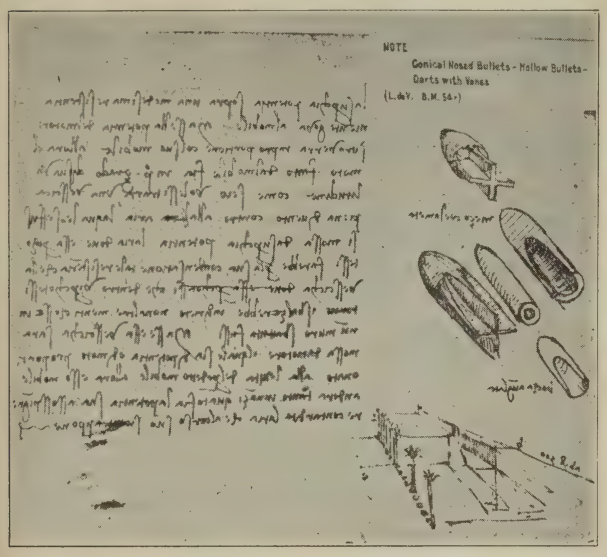

Fig. 6.—Cylindrical bullets with vanes cut out of the shaft.

of some science or other, and salutes him as the father and maker of the experimental method.

"He is more of a scientist than artist. Even his painting, though he poured into it the treasure of his dreams, was to him primarily a form of science, determined to reproduce the aspects of Nature with the most scrupulous fidelity. All of his studies, even those which were directly related to his work as painter, led in reality toward a complete knowledge of the universe. And his constant preoccupation, which wins the plaudits of the scientists, tend, on the contrary, to repel those who love aesthetic and metaphysical unreality, as I do."

ON BOTANY

Over one hundred and fifty years ago Charles Bonnett, the Genevan botanist, introduced the socalled doctrine of phyllotaxy, that is to say, the exact observation of the relative position of the leaves on the stalk. To the most widely spread form of this position of this relative position he gave the name of Quincux; in this the sixth leaf after the stalk has been twice encircled invariably stands above the first; accordingly, every cycle of leaves consist of five leaves. This discovery was the result of years of study by an experienced and professed botanist. But two hundred and fifty years earlier Leonardo's artist eye had observed the Quincux, and had drawn it with the most painful care, and that is found in his *Book on Painting.*

LIFE OF LEONARDO DA VINCI

Leonardo was born at Vinci, a Tuscan mountain town, near Empoli, in 1452, the illegitimate son of Ser Piero d'Antonio, a Florentine notary, and Catarina, a peasant woman. His boyhood was spent at the paternal home at Vinci. In 1649 his family moved to Florence, where his father's wealth enabled him to enjoy the very best education which Florence, at that time the intellectual and artistic centre of Italy, could afford, and he speedily became the embodiment of every social and intellectual charm. He was singularly handsome in person, powerful in physique, persuasive in conversation; and his mind was possessed of an insatiable love of knowledge and research, which proved the controlling factor of his life. Before taking up painting, he began the studies in mechanics and in the natural sciences which went hand in hand with his artistic activity throughout his life.

About 1466-69 he became the pupil of his father's friend, Andrea del Verrocchio. In 1472 he was entered into the painters' guild of Florence and in 1476 he is still mentioned as Verrocchio's assistant, but in 1478 he was working as an independent master. From Verrocchio, Leonardo learned modelling as well as painting; but nothing of his work during apprenticeship has survived. According to Vasari he painted an angel in Verrocchio's *Baptism of Christ,* with such skill that his master resolved to cease painting. The statement concerning Verrocchio is wrong, but it is quite possible that the angel in question is by Leonardo. The account of the terrifying shield upon which the artist painted all manner of monstrosities acquired from his studies of lizards, serpents, worms, etc., may have some basis of fact; but the *Head of Medusa* is certainly a forgery based on Vasari's description. The *Annunciation,* too, in the same gallery, is by a member of the school of Verrocchio; but a genuine painting of this subject by Leonardo is in the Louvre.

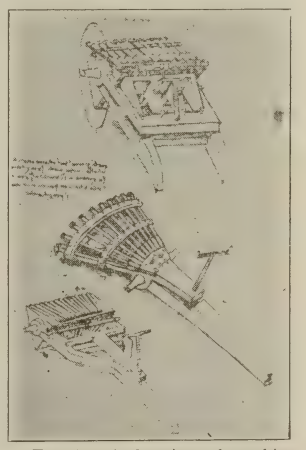

Fig. 7.—A drawing of machine gun.

Fig. 8.—Sketch of flying machine.

In 1478 he was commissioned by the Signorio of Florence to paint a picture for the Chapel of St. Bernard, in the Palazzo Pubblico. His first masterpiece, *The Adoration of the Kings,* which is in an unfinished state, survives in the Uffizzi, was ordered in 1481, for San Donato a Scoppello, Florence. The figures have not for the most part advanced further than the grounding; but they reveal a fine scheme of composition, and dramatic action.

(To be concluded)

Early Remedies for Hydrophobia

KATHRYN MADDREY
Austin, Texas

Since Louis Pasteur formulated his preventive treatment of one of man's most dreaded diseases, hydrophobia, in the early eighties, further progress made has been largely that of improving the means of applying the treatment first laid down by the great French scientist, according to physicians. Before that time there were many treatments in common use which were often credited with remarkable results. These long ago passed out of common knowledge.

The Pasteur method is still astounding, and to the lay mind sometimes incomprehensible. The old practices, though hopelessly out of date so far as their medical value is concerned, are still interesting, however. In the *American Museum, or Universal Magazine,* a journal published in Philadelphia in 1790, appears an interesting account of the treatment of the disease in that day.

The author of the article says, regarding his remarks, "If by the mode of treatment here laid down, a single life shall be saved, it will be a source of the highest satisfaction to the author, who is actuated by a desire to spread the knowledge of and to excite the attention of physicians toward the disorder, the most dreadful to which humanity is subject."

"The medicine alluded to," the article continues, "composed of musk and cinnabar, is commonly called the 'tonquin or East India remedy,' as it first came from that country where it was said to have been given with great success which induced physicians in other parts of the world to try it. But from their numerous accounts, by no means with that success which the credulous East Indians had said.

"Musk, if produced genuine, certainly would prove useful in this disease by its stimulating power, but this is seldom the case, for from its great scarcity and consequent high value, it leads apothecaries and others greatly to adulterate it. But even where it is pure, its union with an inert substance such as cinnabar would greatly diminish its virtues and interrupt or totally destroy its operation on the human body. I therefore think that the use of it ought to be laid aside, and our reliance placed upon other medicines by which more certain effects would be produced.

"Sir Hans Sloan first, and after him Dr. Meade, warmly recommended the famous Dampier's powder composed of ash colored ground liverwort and black pepper. But it was always found to be ineffectual where the disease for which it was given existed.

"The Ormskirk medicine, likewise, which for some years afterwards gained credit in England, soon fell into disrepute upon the death of several persons in various parts of Great Britain who, after being bitten by animals really mad, took the medicine with the fullest expectation of a certain cure, but were seized with the hydrophobia and died raving mad.

"Copper, which even in the dose of a few grains acts as a powerful emetic and purgative, was also some years ago much celebrated in Germany for its good effects on this disorder. The reputation, however, of this poisonous metal was but short lived, and now we hear no more of it."

That quack medicines flourished then even as now is shown by the writer's remarks on a presumably valuable remedy which had been in the possession of a certain family for many years. Notices similar to the following, which was taken from the same publication, are found today in many papers.

"In this city a man publishes an account every summer of his having an infallible cure for this disease composed entirely of 'vegetables,' which are to be boiled in milk and taken internally. And in order to make it have more weight with the vulgar, he says, 'the receipt has never been out of his family, but descended from father to son for a century past.' I have never heard of a cure performed by this man and his vegetables, but know that he failed in an attempt in the Pennsylvania Hospital some years ago where as fair a trial was given as he wished for.

"It was only the most superstitious reverence of Dr. Boerhaave's name and authority by his pupils and others that made the method laid down by him be so long pursued of treating the disorders as of a highly inflammatory nature, and of course ordering the most powerful evacuations, as it was always found to be very destructive and attended with the most fatal consequences to those who had the misfortune to be the subject of this injudicious mode of treatment.

"The only certain means by which this disease can be presented is either to furnish an outlet for the poison occasioning the disease by exciting an inflammation and a suppuration in the wound as soon as possible after the bite has been received, or by invigorating the system, render it superior to the powerful sedative nature of the poison, thereby preventing the debility consequent on its being induced into the system. It is of no consequence by what means this inflammation is effected, so that the different applications insisted upon by different practitioners and others may all be proper enough, for upon enquiry it will be found that they are all of a stimulating nature. For such length of time has the propriety of this practice been known that I observe Aetius recommends it. Celsus likewise advises cupping and applying the actual cautery to the wound. Dr. Boerhaave, in order to do the business effectually, desires a suppuration to be kept up from the bitten part for six months, and to be continually fomented with a pickle made of vinegar and salt.

"Upon this principle, that is, of exciting an inflammation, I conceive the 'solution of the common caustic in water,' mentioned in the *Museum* for February, 1787, can only act, and also the 'finely powdered common salt,' so highly spoken of by Dr. Gale in his letter to the medical society of New Haven, Connecticut, which is inserted in the number of your work for December of the same year. Dr. Haygarth's method, of a long continued stream of cold water from the spout of a tea kettle in the greatest number of instances can only be explained in the same manner, so it is not entitled to more faith than the rest of the above topical remedies except where the wound happens to be received on the face or near some large

bloodvessel where a dangerous hemorrhage might be expected, or deformity ensue from the enlargement, or scarification of the part in which case the plan of ablution may be used with great advantage.

"Of all the applications, however, that have been recommended, the use of strong mercurial ointment has been attended with the greatest success. Having therefore dilated and scarified the wound, two drachms of the ointment may be rubbed into the sore and the same quantity round the throat, and two or three grains of calomel given every day combined with opium, to prevent it running off by the bowels.

"This practice must be continued until the mouth be affected and the sore considerably inflamed when the use of the calomel may be laid aside for some days, and if necessary a purge given that the effects of the mercury may abate.

"This practice must be occasionally repeated for four or five months at least, during which time the wound ought by no means be suffered to heal, but a copious suppuration made to flow from it. After which, if no symptoms of the hydrophobia appear, the patient may be pronounced out of danger.

"But in case we should be called in late when the wound is nearly or altogether healed and the disease has actually appeared, the above mode of treatment should be strictly pursued, though with much greater expedition. The part bitten should be dilated and scarified, the quantity of both mercurial ointment and calomel should be increased, to the former of which some oil or spirit of turpentine may be added to increase its stimulant effect. And as fear tends to debilitate and increase the disease as a placid and joyful state of temper contributes to its removal, the passions of the patient ought by no means to be ruffled, but the utmost confidence inspired in his mind.

"I am very readily disposed to embrace the opinion of our learned and ingenuous countryman, Dr. Rush, in ascribing both tetanus and hydrophobia to the same proximate cause. We have numerous and well attested instances on record of the latter disorder being produced in persons who have not been bitten by a mad animal, but in whom it was occasioned by excessive fatigue and labor, violent and depressing passions, chagrin, fear, grief, anger, and the like; causes which are powerfully debilitating.

"I am, therefore, fully persuaded that the plan of treatment to be pursued in both diseases ought to be the same, that is, giving medicines to strengthen and invigorate the system.

"Of the good effects of tonics in the tetanus, Dr. Rush has given incontestable proof, but whether they will prove equally serviceable in the hydrophobia, he has not as yet determined. The strong analogy, however, between the two diseases renders the probability very great. The liberal use of opium, wine and bark is very advisable, therefore, as the surest means of preventing the disease, and also of curing it."

How Insanity Was Treated in the Middle Ages

In the Middle Ages the devil was a very definite reality. Not only his moral—or rather his immoral—qualities were catalogued, but his corporeal manifestations were known and his psysiognomy was well established. All his depicters were as well agreed in this matter as are our contemporary artists on Santa Claus.

All insanity was looked upon as being an obsession by the devil. The terms upon which one sold his soul to the devil were clearly understood and the proper methods of exorcising him were clearly set forth in many books by various authors. This is most interestingly set forth in *The Devil, an Historical, Critical, and Medical Study,* by Garcon and Vinchou, recently published in Paris.

One of the medicaments recommended for the treatment of those "possessed of the devil," as the insane were designated, was the application of an oil made according to the following formula: Mix equal parts of rue, sage and fennel with olive oil and holy water. First boil the mixture and then have it blessed. During its inunction the priest should invoke the aid of God, the creator of the world, against the demon infecting the patient, and against the phantoms which it produces. The priest also prays that the patient may be cured of the weakness following the expulsion of the demon.

Another contains the flowers of scoparius, of white marrubium, of nettle and of rue. Scoparius is still employed as a heart tonic and, according to the researches of Henri Leclerc, marrubium is useful as an antispasmodic. Therefore, while this formula is wholly empirical it is still in accord with modern views and might still be administered today to a maniac.

The treatment should be given in a church or other building dedicated to God. But in no case should it be carried on in the home, because of the presence there of women who, it is believed, are prone to fall under the dominion of the devil.

We reproduce from the book a wood cut from *The Life of the Saints* printed in Augsburg in 1488. —*Aesculape.*

Editorial Articles

THE MORAL SENSE IN PSYCHIATRY

The general practitioner, busying himself with childbirth, measles, pneumonia, arteriosclerosis and enlarged prostate, has but little time to concern himself with abstract questions of ethics. Bound himself by a somewhat rigid code he but seldom meets with problems in his professsional relationship which cause him much uncertainty and his conduct tends to become rigidly conditioned. In the conduct of his patients he recognizes, albeit with a somewhat greater tolerance as a rule than the layman, the good and the bad, the honest man and the sneak, the hero and the craven. Thus, in his discussions with his colleagues and occasionally in his contributions to the journals we meet with expressions of approval or of condemnation.

But when we come to consider the psychiatrist a different attitude should prevail. For here we have one who is concerned with human behavior. He has not progressed far into his subject before he learns that any act is not a solitary circumstance but the end result of a billion causes. He learns that the person starts life with an equipment derived from a phylogenetic history of millions of years and that from birth onward he is subjected to countless influences, moulding and directing his course. Knowing this, he is not inclined either to praise or to blame. Nor is it in his province to do either. His function it is to study human behavior in its ordinary manifestations and in its usual aberrations with the idea of dealing adequately with those forms which are inimical to the health of the individual or the welfare of society. To the psychiatrist deviations from the norm should be scientific facts. He should recognize them as behavior problems purely and entirely unconnected with ethics. Thus he does not speak of a patient as being bad, or vicious or mean, or use any other adjective implying censure.

Probably in no aspect of human behavior is this caution more necessary than in dealing with sexual problems. It is quite common to read descriptions of sexual perversions in supposedly scientific magazines and find them full of such terms as horrible, disgusting, depraved, and others.

This is of course easily translated by the initiated. Such and such a thing is disgusting to me, that is, it arouses my disgust, because it has an emotional appeal to me which I must negative by an equally strong and antipathetic emotion. All of which is from the primer of psychopathology and would not matter one way or the other except that the constant insistence upon a moral standard in dealing with such subjects influences in time wouldbe students and deters them from investigation.

Let us then avoid all such critical terms in medicine. Facts exist ineluctably as the results of causes and modes of human behavior are as much scientific facts as the action of sulphuric acid on iron. They should be described, discussed and interpreted if possible, but not pilloried.

PERIL OF THE STREET

Among the countries and cities of the world this country and New York city hold an unenviable reputation for the large number of road and street accidents chiefly consequent upon the immense volume of motor traffic in general and automobiles in particular.

However, the most recent statistics in this respect from Great Britain, London and other cities show that accidents are increasing there at a rapid and alarming rate. In London alone the increase has been notable. For example, in 1909 in the London metropolitan police district there were only 303 fatal accidents, of which 171 were due to mechanically propelled vehicles. In 1924 the total rose to 665 and in 1925 to 833, the proportion attributed to mechanically propelled vehicles last year being 765, or more than four times more than in 1909. The same tale prevails for Great Britain as a whole.

Horse drawn vehicles are so little used now that they account for only a small proportion of the street accidents which occur today.

Motors of every description have been increasing at an enormous rate, nearly one hundred thousand a year. And it may be noted that while that increase has gone on the proportion of fatalities to vehicles has, it has been computed, remained fairly constant at a fraction over two per thousand. Accordingly there is hope that in due time improvement may set in.

Compared with street or road, some other forms of travel seem to be quite safe. It is certainly true that in 1924, the last year for which returns are available, only forty-two persons were killed and 683 injured on the British railways so that in view of the number of passengers carried there would appear to be good foundation for a remark made by the British Minister of Transport, that the chances of being killed on the railway are one hundred and sixty-five million to one compared with ten thousand to one in the London streets. It was said before the British Coal Commission that the Londoner's chances of accidents are about equal to those in a coal mine.

If this be so the New Yorker compares very unfavorably with the coal miner with regard to the risk he runs to life and limb when walking or driving in this great city. At sea the loss of life averages about two hundred and forty a year, and although flying is held to be especially dangerous, there were last year only forty-two accidents involving fifty-seven deaths which almost makes one believe that it is safer to fly than to travel on a motor cycle for instance.

As regards the possibility of reducing the number of street accidents there have been various suggestions. One expert has recommended the adoption of a new jury system for investigating the cause of vehicular accidents and the best means for preventing their recurrence, just as inquiries are made into the cause of railway accidents. There is a tendency in this country in the case of an accident in which a pedestrian plays one of the principal parts to lay the blame on the one afoot. The truth appears to be that both driver and pedestrian need to exercise more care than is sometimes exercised, but as the pedestrian is necessarily the greatest sufferer in the case of collision, it seems that it should be made incumbent on the driver of an automobile to be especially careful and to be severely punished if he is careless. The problem of the streets and roads is grave and means should be sought and put into practice whatever the cost may be to minimize their risks.

SOME AMERICAN PHYSICIANS AND SURGEONS

In the *Peaks of Medical History,* written by Dr. Charles L. Dana, published by Paul B. Hoeber, Inc., New York, is given a brief history of the evolution of medicine. As Dr. Dana succinctly says, he emphasizes the high spots in the evolution of medicine, so that a student may in a short time obtain a visualization of the subject as a whole, and thus get a background upon which he can work out details in accordance with his interests and tastes.

The author has succeeded admirably in his avowed object and has produced a work which is at one and the same time instructive and fascinating. He draws attention to a great English clinician, Thomas Willis, 1621-1675, a contemporary of Sydenham, and who really did more original work than that great observer. Willis, of whom little is heard, first described typhoid and puerperal fevers, dementia paralytica and myasthenia gravis. He was a great anatomist, and described the circle of Willis in the brain and named the cerebral nerves.

Dana points out that in Boston, the name of Warren is associated closely with the history of American surgery and the technical achievements of those early days. Dr. John Warren, 1753-1815, rendered service in the Revolution and was the first professor of anatomy and surgery in the Harvard Medical School, of which he was really the founder in 1783. His son, John Collins Warren, 1778-1856, was a pioneer in orthopedic surgery and a very successful operator. He was founder of the Massachusetts General Hospital in 1811 and was the surgeon who cooperated with Morton when he introduced ether.

In Philadelphia the name of Dr. Benjamin Rush, 1745-1813, stands out as the leading physician of that city from the time of the Revolution until his death. Rush was a man of unusual activity in social and political life, as well as in the teaching and practise of medicine. He was the first in this country to write systematically on mental disease. He is widely known in history as one of the signers of the Declaration of Independence.

A man who was equally famous in the practise of his profession was Philip S. Physick, 1768-1837. Physick was a very ingenious and skilful surgeon and is known as the father of American surgery, but he did not write concerning his work.

In the early part of the nineteenth century there was an interesting and distinguished group of medical men in New York. The earliest of them was Samuel Bard, 1742-1821. He was the founder of New York Hospital and was physician to General Washington. His father, Dr. John Bard, was also an important man of his day, having among other things instituted the Pest House on Bedloe's Island.

Dr. David Hosack, 1769-1835, was born in New York of Scotch descent. He was prominent as a teacher and held six professorships during the latter sixteen years of his life. He helped to organize the dispensary system of New York and founded the Humane Society.

Dr. Valentine Mott, 1785-1865, was one of the greatest of New York surgeons. Mott was active in the organization of the medical schools of this city. At the beginning of the century there were two medical colleges here; these became united under Columbia University in 1811. In 1826 the medical faculty revolted and founded the Rutgers Medical College, which lasted about five years. Dr. Mott was especially famous for ligating the important arteries of the body. He is said to have been the first man in this country to tie the innominate artery and he ligated with success the common carotid artery. He is said to have done 132 important ligations. He, like Dr. Physick, did not contribute to literature.

Dr. John Francis, 1789-1861, wrote on dipsomania and insanity, but his most important work was a history entitled *Old New York.* Dr. W. E. Horner, 1793-1853, of Philadelphia, was an able teacher of anatomy and the author of a well known textbook. The world renowned Dr. Oliver Wendell Holmes, of Boston, 1809-1894, whose literary work has over-

shadowed his fame as a physician, was professor of anatomy at Harvard University and the earliest defender in this country of the view that puerperal fever is a communicable infection. Dr. Samuel D. Gross, 1805-1884, of Philadelphia, was a great surgeon and the author of the first treatise on pathological anatomy. He also wrote *The Lives of Eminent American Physicians and Surgeons,* published in 1861.

Dr. Dana has deserved well of the medical profession of all countries by writing *The Peaks of Medical History.*

THE SURGERY OF RICKETS

The cause of rickets, if not known precisely for practical purposes, seems to have been discovered to such an extent that it can be largely prevented. It is not lack of light alone or improper diet alone that causes it, but a combination of these. Rickets can be prevented in children with a tendency in that direction by giving them a sufficiency of light and fresh air, giving them a diet containing the organic factor concerned in the calcification of bone and an adequate amount and correct balance in the diet of the salts of calcium and phosphorus. Moreover, cod-liver oil is the most dependable single agent for cure.

While rickets can be prevented, much rickets will not be prevented and for some time to come the correction of deformity due to the disease will remain a task for the orthopedist. At a meeting of the Manchester Medical Society held on March 31st last, Mr. Henry Platt, a leading orthopedic surgeon of that city, discussed the problem of the prevention and cure of deformity proceeding from rickets. He pointed out that many of the measures used today in the treatment of rachitic deformities had undergone little modification since their introduction years ago. At the present time operative intervention in rickets was being placed on a sounder basis. A deformity corrected in the stage of florid rickets was always likely to recur, so that some criterion of the activity of the disease was needed. This had now been provided as a result of a study of radiograms of the epiphyses in the various stages. Other advances had been made in the study of rickets which rendered the work of the surgeon more sure and more safe.

He pointed out that rachitic deformities which called for the attention of the surgeon usually affected the lower limbs, and of these there were three main types—bow legs, knock knee and coxa vara. Bow legs were essentially a deformity which showed a tendency to spontaneous rectification and it was rarely necessary to employ any special measures and still less necessary to operate. Knock knee, in contradistinction to bow legs, was usually a progressive deformity and once initiated tended to increase long after rickets had healed. As it was determined chiefly by weight bearing, in the early stage this should be prohibited wherever possible. Under the exceptional conditions of an open air hospital, moderate degrees of rachitic knock knee would disappear without any form of splinting. In ordinary hospital out patient practice it was usual to apply a corrective walking appliance, the best form being the classical knock knee brace of Thomas.

A great many cases of knock knee in older children, however, came for operative correction, and on the whole the results of femoral osteotomy were exceedingly good, provided the aftertreatment was adequate. In the adolescent and young adult it was desirable to employ traction or a Thomas splint for as long a period as possible. This minimized the angulation and overlapping of the fragments and helped to ensure rapid union. Refracture after a femoral osteotomy was not an uncommon experience. In the older patients it was sometimes difficult to reproduce the full mobility of the knee joint in a short time.

Mr. Platt said that coxa vara of rachitic origin could be almost ignored as it was chiefly a deformity appreciable only in radiograms. In the production of spinal deformities rickets was a subsidiary or negligible factor.

Surgery, that is operative surgery, plays no great part in correcting rachitic deformities. Orthopedic attention is called for but the treatment of rickets in youth, young and adult life as well as in childhood appears to largely consist in fresh air, sunlight and appropriate diet.

THE LAKE MOHONK CANCER SYMPOSIUM

The purpose of the symposium on cancer control held at Lake Mohonk, New York, October 20th to 24th, has been stated as that of considering the prevention and cure of cancer from a practical viewpoint, and of expressing in concise language the fundamental groundwork of fact and opinion upon which the collective effort now being made in the United States and other countries for the control of cancer should be continued and extended. It was believed that there were many things that physicians and surgeons could agree upon, and that, if these should be expressed in simple, concise terms, the results would be of great value. The meeting, instigated several months ago through the efforts of the American Society for the Control of Cancer, was most successful from the viewpoints of attendance, both American and foreign, and of publicity through the press, which would undoubtedly have been even greater, had not the Dempsey-Tunney fight and the Florida hurricane taken place at the same time.

The chief results of the conference were sum-

marized by Dr. Welch at a dinner to the foreign guests held in New York at the close of the symposium, at which he said: "The great note struck at the Mohonk symposium was the tremendous importance of the cancer question and the appalling problems which it presents. There was never a time when tuberculosis presented problems of such magnitude. The general public and the medical profession must be aroused to the vital importance of efforts to control cancer. However inadequate our knowledge is today, it is an obligation of the profession to the general community that every effort be made to control this scourge. The community must be taught that all types of cancer are not certainly and inevitably fatal if they are recognized and properly treated at an early stage. Emphasis was placed upon the importance of research work, the need of further additions to our knowledge on the one hand, and equally upon the necessity of applying our existing information for the saving of human lives and suffering. There is no disease to which larger additions have been made to our knowledge than cancer, but, because this knowledge does not reach the public which we are most anxious to reach, this seems trivial. The many papers and discussions will be published, and will make a volume which will be an epochal contribution to our knowledge of cancer."

Obituary

MR. H. W. PAGE, M.B.C.M., F.R.C.S.

London

Mr. Herbert William Page, consulting surgeon to St. Mary's Hospital, London, died at his house in Farnham, Surrey, on September 9th, in his eighty-first year.

Mr. Page was a great surgeon and as surgeon to the London and North Western and Great Western Railways devoted much time to the scientific investigation of the symptoms produced directly or indirectly by injuries received in railway accidents. As one result of his careful study he wrote *Injuries of the Back Without Apparent Mechanical Lesions in Their Surgical and Medicolegal Aspects,* for which he was awarded the Boylston medical prize by the University of Harvard in 1881. His work on *Railway Injuries* appeared in 1893.

He entered the University of Edinburgh in 1864 as a house pupil of James Spence who rejoiced among the students in the cognomen *Dismal Jimmy.* From Edinburgh young Page went to Christ Church, Cambridge, where he graduated in arts and medicine, taking also the degree of master of surgery and being elected a Fellow of the Royal College of Surgeons. He then went to the London Hospital, Whitechapel, where he acted as house surgeon to Jonathan Hutchinson, and came under the influence of two brilliant minds, Sutton who taught him the value of morbid anatomy, and Hughlings Jackson, the founder of modern neurology. Page then went to Vienna and when the Franco-Prussian war broke out he served as an assistant surgeon in the Hessian Division of the German army.

After his return to England he practised for a short time with his father in Carlisle and then came to London. He was appointed surgical registrar at the London Hospital in 1875 and in the next year was made assistant surgeon at St. Mary's Hospital. He was on the staff of this hospital for the rest of his life and assisted to raise the standard of its medical school. He was one of the first London surgeons to recognize the value of Lister's teaching and to adopt it in practice. He was a president of the British Neurological Society, an unusual honor for a surgeon, and was a member of the Council of the College of Surgeons and a member of the Court of Examiners. He retired from active work at the end of 1906.

Page was a skilful operator, and possessed as well a wide and deep knowledge of medicine. He was a man who shunned the limelight but possessed the complete confidence of the profession.

ROBERT G. REESE, M.D.

New York

Dr. Robert G. Reese died at his home in this city, on October 18th, at the age of sixty-one years. He was born in Virginia, where he received his early education. He received his medical degree from New York University in 1891. He specialized in ophthalmology and was for years professor of clinical ophthalmology in Cornell Medical College. Dr. Reese was a Fellow of the American Medical Association and of the American College of Surgeons, a member of the American Academy of Ophthalmologists, the Medical Association of New York, and of Phi Beta Kappa.

WILLIAM S. BIGELOW, M.D.

Boston, Mass.

Dr. William S. Bigelow, who died at his home in Boston on October 6th at the age of seventy-six years, was for more than half a century a leading authority on art, a distinguished author, and a life long friend of Senator Henry Cabot Lodge. He was a graduate of Harvard Medical School and lectured in that school from 1879 to 1881 but soon retired from active practice devoting his time to the study of the arts.

He was a student of Buddhism and published a volume on *Buddhism and Immortality.* He made the finest collection of Oriental art in existence, except that of the Japanese government. This he presented to the Boston Museum of Fine Arts in 1911.

Dr. Bigelow was a member of the United States Assay Commission, the Massachusetts Medical Society, and the Boston Society of Medical Sciences. He was Commander of the Imperial Order of the Rising Sun, a Japanese organization; a trustee of the Museum of Fine Arts, a director of the new Boston Music Hall, a Fellow of the American Academy of Arts and Sciences and a member of the Asiatic Society of Japan, the American Oriental Society and similar organizations.

EMERGENCY HOSPITAL OF THE SESQUICENTENNIAL EXPOSITION
Dr. A. Markley, interne; Miss Irene Parkins, nurse; Miss Leah Krumbine, nurse; Dr. H. R. Lefever, interne

Medical Aspects of the Sesquicentennial Exposition

Some two thousand acres of land are used in the Sesquicentennial Exhibition of Philadelphia. On this there are forty-five major exhibition buildings, two hundred and fifty pavilions, booths and stands, four flying fields, an attractive chain of lakes and lagoons and, many landscape gardens. The auditorium has a seating capacity of fifteen thousand and the stadium, where the heavyweight pugilists decided the championship, has a seating capacity of eighty-six thousand. The grounds are located at the junction of the Schuylkill and the Delaware rivers some ten miles south from the City of Philadelphia and adjoining the Navy Yard, which is used as a part of the exhibit.

The Philadelphia Department of Health has general supervision of all the sanitary arrangements of the grounds and has taken every precaution to safeguard the well being of the thousands of visitors who have been daily coming through the gates of the grounds. Food sold at the two hundred and fifty and more food concessions on the grounds, is inspected rigidly. Drinking water is furnished from the Philadelphia water mains and the grounds are sprinkled frequently to keep down dust.

The Philadelphia General Hospital has taken over an emergency hospital which was one of the first of the buildings completed. This is operated as an emergency branch under the general direction of Dr. Joseph C. Jones, Medical Director of the Philadelphia General Hospital. It is provided with an ambulance service and has treated one hundred cases a day since the opening of the exposition. Most of these cases are minor complaints and accidents. All serious cases are transferred to other hospitals after being given first aid. The hospital is provided with ten beds and the staff includes three internes and three nurses, an ambulance driver and motorman. All of these are drawn from the staff of the Philadelphia General Hospital, the interns being changed from time to time. The accompanying illustration shows this emergency hospital, the ambulance, the grounds and the hospital staff.

The walls of this, as of most of the other buildings on the grounds, are of stucco, of a pleasing gray color. The hospital, as is shown, is but one story high. On the left of the entrance is the office where complete records are kept of all patients who come under the care of the staff. A central hallway divides the men's ward from the women's. There are several separate rooms for grave cases. To the rear of the wards are a diet kitchen and rooms for the staff, which is generally changed fortnightly.

The hospital is directly across the street from the Palace of Education and Social Economy, Pattison avenue near Broad street, where the Philadelphia medical exhibit is housed. This is augmented by the displays of many nation wide medical organizations, in addition to those of the city proper, including the United States Public Health Service exhibit, in the Palace of the U. S. Government, mines, metallurgy and transportation and the State display on stabilizing the health of the public in the Pennsylvania Building.

The exhibit in the Palace of Education and Social

Aeroplane View of the Sesquicentennial Exposition

Economy was arranged by the committee on medicine and allied sciences which includes dentistry, pharmacy and nursing.

Dr. William Duffield Robinson heads the Executive Committee which includes also Dr. David Reisman, Dr. Henry D. Jump, Dr. E. R. Sausser, Dr. William A. Pearson, Dr. George H. Meeker, Dr. George A. Knowles and Dr. Seneca Egbert.

The chairmen named on the various committees were: Dr. John H. Jopson, surgery; Dr. C. C. Wolferth, medicine; Dr. Seneca Egbert, hygiene and sanitation; Dr. E. R. Sausser, dentistry; Dr. Charles H. LaWall, chemistry; Mr. Ambrose Hunsberger, pharmacy; Dr. Isadore Kauffman, tuberculosis; Dr. J. T. Rugh, orthopedic surgery; Dr. B. A. Thomas, urology; Dr. George Morrison Coates, laryngology; Dr. J. F. Schamberg, dermatology; Dr. D. J. McCarthy, neuropsychiatry; Dr. William N. Brad'ey, pediatrics; Dr. Willis F. Manges, radiology; Dr. Ross V. Patterson, medical education; Dr. Francis R. Packard, medical history; Dr. E. S. Barr, occupational therapy; Dr. J. D. McLean, public addresses; Dr. Moses Behrend, County Medical Society; Dr. T. B. Holloway and Dr. Louis Lehrfeld, ophthalmology; Dr. Hubley R. Owen, police department; Miss S. Lillian Clayton, nursing, and John M. Smith, hospitals.

The subdivisions of medicine at the display sponsored by Philadelphia show the prevention of infectious and contagious diseases, the prevention of heart and kidney diseases, cancer, etc. It has been the object to make this exhibit one easily understood by the average lay mind and to illustrate medical progress during the one hundred and fifty years since the Declaration of Independence which the Sesquicentennial International Exposition has been celebrating.

There is an excellent exhibit showing the whole story of the winning fight against tuberculosis and the modern methods of treating this disease which illustrates the value of heliotherapy.

The necessity for the reduction of the number of deaths from cardiac disease is emphasized by the State Society of Pennsylvania and the heart association is playing a prominent part in this battle with its display. Cancer prevention is illustrated graphically by the American Association for the Prevention of Cancer.

The medical division of the department of Public Safety of Philadelphia has another display which has attracted thousands of visitors. This is under the direction of the Chief Police Surgeon, Dr. Hubley R. Owen. How police and firemen are protected by modern methods in a great municipality is shown.

The bronchoscopic division is arranged under the supervision of Dr. Chevalier Jackson, the well known laryngologist. It portrays the rapid advances made in the work of removing foreign bodies from the air passages and instructs parents on the dangers of allowing dangerous objects to come within reach of the child at the time when every instinct leads it to place things in his mouth.

Handicraft by the physically incapacitated and mentally ill is shown in the occupational therapy division. The specimens are from different institutions in Philadelphia and vicinity. Adaptation of the work to the mental and physical ability of the patient is portrayed graphically.

There is much of interest to the pediatrist in the child health division. A feature is a replica of a city street in the slums with its many health problems strikingly depicted. This is contrasted with the model home, the best type of lying-in room and child hygiene lessons.

Entrance and Column of Original Thirteen States, Sesquicentennial Exposition

PUBLIC HEALTH AND MUNICIPAL HYGIENE

Much interest is displayed by visitors from all over the country in the divisions of immunology and bacteriology, public health administration and municipal hygiene, nutrition, domestic hygiene, industrial and social hygiene and entomology. Illuminated stage pictures show insects that purvey diseases, their development and breeding spots.

The Philadelphia County Medical Society, allied with the State Organization, shows how the public as well as the medical profession is benefited by cooperation among medical men. Membership in official medical organizations is shown with emphasis. More than five hundred square feet of space are used by the Interstate Dairy Council to show the handling and treatment of milk and its vital relation to the prevention of disease and to health.

Many sufferers from hay fever have visited the display on preventive measures against this prevalent disease. The various plants, shrubs and trees which produce this annoying ailment are shown and the public is informed regarding the prophylactic pollen injections that may be utilized. Samples of grass and weeds are shown under glass in the hay-fever booth with descriptions and parts of the city and United States where the growths are common.

DENTISTRY

Physicians, as well as dentists, are showing great interest in the display of the department of dentistry. A striking contrast is portrayed between a modern dental office and an old fashioned one. The place of the x ray is emphasized as an adjunct to modern dental work. Preventive dentistry and mouth hygiene in relation to children and public health are strongly emphasized.

Old fashioned surgical dental instruments are on exhibit beside those of the modern day. Artificial teeth of great antiquity may be seen carved from walrus tusks, porcelain and ivory.

PHARMACY

One of the most interesting portions of the display is the Pharmacy Department with features that go back a hundred years and longer. The spectator may view fixtures of the old Glentworth drug store, a type, seen often in Philadelphia more than a century ago. The owl—bird of wisdom—carved from a board and dingy with age, surveys the apothecary shop from its perch on an ancient stained shelf. Underneath is the Goddess Athena, used as a symbol for hundreds of years in European pharmacies. Bottles are shown that once held the strange concoctions of a superstitious day.

Some of the older relics viewed came from a day when Washington, Father of the Country, and other Colonial figures saw them in the quaint old pharmacy at Fifth and Chestnut streets.

The original iron mortar and pestle of this colonial apothecary shop can be seen with the date 1774 painted on the side. Powders ground in it at an early date in the history of American pharmaceutics still cling to the vessel.

There is a large "balance" with porcelain weights and pans resembling soup plates. On the floor is a large copper retort which nearly every visitor immediately classifies as a still.

There is a mortar and pestle dating back to the fifteenth century in Switzerland and another that was cast in 1689. Another bears a date of 1726 and still another, used by the Mexicans at an early date, is made of volcanic rock, while one carved from wood is of Aztec origin. Two oil portraits hang on the walls of former vice-presidents of the Philadelphia College of Pharmacy and Science. There also is a painting of Dr. George B. Wood, professor of chemistry at the institution from 1822 to 1831. Oil portraits are shown of Henry Troth, vice-president for eleven years and William Procter, Jr., professor of pharmacy, the "father of American pharmacy." Contrasted with these mementoes of bygone days is a modern pharmacy.

TUBERCULOSIS EXHIBIT

State sanatoria for tuberculosis patients are portrayed graphically by the State Department of Health under Secretary Miner. Heliotherapy's value is demonstrated forcefully. This exhibit is located in the Pennsylvania Building. Preventive measures are shown that are valuable in diphtheria with charts proving the cut in the death rate since the introduction of antitoxin and toxin-antitoxin in the prevention and treatment of this disease.

NURSING

At the Nursing Exhibit, in the Palace of Education, preliminary and professional training of the nurse is portrayed. The scope of her work is outlined and possibilities for specialization in this field is emphasized. A quotation from Herodotus surmounts the display; which epitomizes prophetically the work of the modern nurse.

The quotation says: "Neither snow, nor rain nor gloom of night stays these couriers from the swift completion of their appointed rounds."

In this booth a tactful trained nurse tells visitors and prospective pupils of the splendid service rendered humanity by this profession. On display are magazines from twenty-two different countries in thirteen different languages devoted to the nursing profession.

There is a duplication of Philadelphia's first infirmary in High street, Philadelphia's reproduction of Market street in the days of 1776 and before. In this reproduction of the Colonial thoroughfare are the homes of George Washington, Robert Morris, Thomas Jefferson and others of the founders. Benjamin Franklin's printing and book shop are shown, the counting house of Stephen Girard and the home of Dr. Shippen, a distinguished physician of Colonial days.

EXHIBIT OF THE GOVERNMENT

The Government's exhibit in the Transportation Building near the Navy Yard has been receiving high praise for many weeks past by medical as well as lay visitors. Many doctors who served in the World War have been among the visitors to the display of the United States Veterans' Bureau. On a large map is shown the locations of all the regional hospitals of the United States and there is an exhibit of furniture and other handicraft of incapacitated veterans.

"Public Health lies at the very foundation of all human welfare," is a message from Calvin Coolidge, President of the United States, displayed over the United States Public Health exhibit.

RECENT TYPHOID EPIDEMIC IN GERMANY

MABEL WEBSTER BROWN
New York

Germany has recently experienced what is reported to be the worst epidemic which she has suffered since the World War. This was the typhoid epidemic which seems to have had its origin in Hanover, Prussia, soon after the high floods suffered last summer by the central European countries. Thence it spread to Magdeburg, where thirty cases were reported on September 14; to Dinsburg, where there were a hundred cases on September 17; and to Halb-

FIG. 1.—Red Cross ambulances transporting the dozens of victims of the typhoid epidemic in Hanover, Germany. (*Henry Miller News Picture Service, Inc.*)

stadt and Groeningen, where there were sixty and thirty-five cases respectively by the middle of September. At the same time, the cases had increased in Hanover from six to eight hundred, with fourteen deaths on September 13th, to nearly fifteen hundred with fifty deaths by September 20th.

Almost immediately after the outbreak of the

FIG. 2.—River houses in which the typhoid epidemic of Hanover, Germany, is believed to have originated. (*Henry Miller News Picture Service, Inc.*)

scourge, the hospitals of Hanover were filled with sufferers and it became necessary to close all the schools and to convert many of them into temporary hospitals. Specialists on infectious diseases were hastily summoned from the universities of Frankfurt, Kiel and Göttingen, and scores of nurses were requisitioned from cities in the vicinity. By September 14th the cases in Hanover were reported as having increased to twelve hundred, with the result that many citizens became greatly alarmed and fled from the stricken city. As many as possible of those who remained were vaccinated free of charge at the various health stations.

Although the time since the start of the epidemic is so short, the health and medical authorities seem to agree that the probable cause of the epidemic was contamination of at least one of Hanover's three municipal reservoirs through the very high water caused by the recent floods in Germany and other central European countries. Hanover is situated on a small river, the Leine, a tributary of the Weser. It is a very old city and much of it is built on low ground, with many houses at the river's edge. Many of these, inhabited by the poorer and uneducated classes, had their lower stories under water during the period of the floods. Contamination of the city water supply was the unfortunate consequence. The illustration shows the type of old house, very picturesque but most unsanitary, on the river bank whence the trouble originated.

News Items.

Neurological Staff Conferences at Bellevue.—The Neurological Service at Bellevue Hospital will hold its staff conferences this year on the third Wednesday of each month. Dr. Foster Kennedy will preside.

New Course at New York University.—The School of Accounts, Commerce and Finance at New York University is offering a new course on hospital and institutional management. Dr. Edgar C. Hayhow, superintendent of New Rochelle Hospital, is in charge.

Memorial to Dr. Grossman.—Announcement has recently been made by the friends of the late Dr. Louis W. Grossman that they have decided to endow a suitable memorial in his name at the Beth David Hospital where he served for many years as a member of the obstetrical staff. A bronze tablet erected in the Memorial Hall of the hospital has been chosen to commemorate Dr. Grossman's life and work.

Dr. Bundesen Honored.—The Victor F. Lawson award for having "performed within the borders of Greater Chicago the most beautiful action or to have done the most beneficial thing for humanity," has been bestowed upon Dr. Herman N. Bundesen, Health Commissioner of Chicago. The award established in memory of its late publisher, Victor F. Lawson, was given by the *Chicago Daily News* in recognition of Dr. Bundesen's work for child health, and especially in the pure milk campaign which he inaugurated and carried through.

Yale Clinic for Infancy Research Enlarges Program.—Through a gift of the Laura Spelman Rockefeller Memorial, the Yale Psycho Clinic for Infancy Research has been enabled to extend its program of psychological investigation and its clinical service to young children. The staff of the clinic, directed by Dr. Arnold Gessell, has been increased by the appointment of several research associates, namely, Henry Marc Halverson, Ph.D., formerly head of the psychology department at the University of Maine; Dr. Marian Cabot Putnam, who has been serving as pediatrist and neurologist at the Boston Children's Hospital and as assistant in psychiatry at the Phipps Clinic; and Helen Thompson, Ph.D., formerly psychological research assistant at the Lincoln School, New York City. Emphasis is being laid at present by the clinic on cooperative research into the early stages of mental development, which will be concentrated on the first two years of infancy and bring into coordination data from different fields, including mental and physical measurements, language and motor capacity, habit and personality development.

New Health Organization for School Children.—The members of the medical and dental professions of the Astoria Center of Israel have organized a professional unit for the supervision of the health of the children in the center's schools.

Eye and Ear Hospital Sells Hospital Site.—The Manhattan Eye and Ear Hospital has sold the four story building at 351 West Thirty-fourth Street, New York, which has been for the past forty-five years conducted as the Metropolitan Nose and Throat Hospital by Dr. George B. Hope, to whom the property had been donated for hospital use. Upon Dr. Hope's death, the Manhattan Hospital took it over and are the present sellers.

New Milbank Health Centre.—The sum of $2,000,000 will be spent in the near future, according to an announcement by the Milbank Memorial Fund, on a new health centre for propaganda to be opened by the Fund at 325 East 38th Street, New York City. The building will be renovated and equipped to contain clinics for tuberculosis, social hygiene, and dental and child welfare, which will be maintained by the New York City Department of Health. The Community Health Council will make this its headquarters.

Medical University Extension Courses.—The Columbia University Extension and School of Medicine is this year giving courses in the diseases of children at the Babies' Hospital, Bellevue, and Willard Parker Hospital, in general medicine and dermatology, diseases of children, gynecology, surgery, pathology, neurology, ophthalmology, and surgical pathology at Mt. Sinai Hospital; a six weeks' course in physiotherapy for medical graduates at the Beekman Street Hospital; and a course in gastroenterology at Columbia University School of Medicine, 437 West 59th Street, New York City.

New Dormitory at Tuberculosis Preventorium.—A new dormitory at the Tuberculosis Preventorium for Children at Farmingdale, N. J., was recently opened with appropriate ceremonies and before a large gathering of notable guests, including many prominent physicians of New York, New Jersey and foreign countries. Among the speakers were Olga Nethersole, international representative at the recent Health Conference at Washington; Dr. Cepulic Vlad of Sagrad, Jugoslavia; Dr. Lydia Kemper of Berlin; Dr. A. F. Hulse of New York, formerly president of the Board of Directors of the Preventorium; and Dr. M. J. Fine of Newark. Among the European guests present were Dr. Reselin of Glasgow, and Dr. Stojanargitz of Jugoslavia.

Dinner to Academy Fellows.—Dr. Samuel A. Brown, the president of the New York Academy of Medicine and also the chairman of its committee on ceremonies in connection with the opening of its new building at Fifth Avenue and 103rd Street, has announced that the Academy will give a dinner in honor of the newly elected Honorary Fellows, at the Waldorf Astoria Hotel on Wednesday evening, November seventeenth. Dr. Brown stated that the selection of the Honorary Fellows was a matter of great importance to the Academy and that the twenty-two new Honorary Fellows had been selected on account of their high professional attainments and the contributions they had made to the progress of medical science during the last twenty years.

These new Honorary Fellows include the following doctors:

Robert Barany, Upsala, Sweden; Charles James Martin, London; Sir Charles Sherrington, Oxford; Marin T. Tuffier, Paris; Josef Jadassohn, Breslau; Friedrich Neufeld, Berlin; Carlos Chagas, Rio de Janeiro; Frank Billings, Chicago; George E. de Schweinitz, Philadelphia; John M. T. Finney, Baltimore; Theobald Smith, Princeton; Edward William Archibald, Montreal; Sir George Newman, London; Henry Head, London; George F. I. Widal, Paris; Friedrich Müller, Munich; Vittorio Putti, Bologna; John Jacob Abel, Baltimore; Harvey W. Cushing, Brookline; George Dock, Pasadena; Chevalier Jackson, Philadelphia; William Sidney Thayer, Baltimore.

Dr. Brown also stated that invitations would shortly be issued for the opening exercises which will be held at the new building on Thursday, November eighteenth, at three-thirty. At that time an invocation will be given by Rev. Henry Sloane Coffin, D.D., and brief addresses by the president of the Academy and the chairman of the building committee, Dr. Arthur B. Duel. In addition to the Fellows of the Academy several thousand guests will be invited to these ceremonies.

Opening of the Johns Hopkins School of Hygiene and Public Health.—The semicentennial celebration of Johns Hopkins University opened on October 22 with the dedication of the new building for the School of Hygiene and Public Health, made possible by the Rockefeller Foundation. The school cost more than one million dollars, and is the first institution of its kind in the world. It is located near the Medical School, the nurses' school, and the new dormitory for nurses, which was opened the day before. The new School of Hygiene and Public Health contains the most complete laboratory in the world for research in and teaching of hygiene. Two rooms are devoted to equipment for producing any type of climate desired.

Personal.—Dr. Alexis Carrel and Dr. L. de Nuoy, of the Rockefeller Institute, have returned to New York after spending the summer at their estates in France.

Dr. Bernard W. Carey, director of the Child Health Demonstration at Athens, Ga., has been given the honorary degree of Doctor of Public Health by the University of Georgia in recognition of his services with the demonstration. The Athens demonstration is one of those being financed by the Commonwealth Fund of New York City.

Dr. Alfred Adler of Vienna will arrive in the United States in the near future to give lecture courses in several of the larger cities of the country.

Dr. Ellis I. Smith, for the past two years senior resident physician at the Essex County Isolation Hospital, Belleville, has been appointed superintendent of that institution. Dr. Smith is twenty-eight years of age and the youngest hospital superintendent in the country. He was born in Texas.

Another young physician from the South, Dr. Vincent Archer of Black Mountain, N. C., also twenty-eight years of age, has been appointed professor of Röntgenology in the Medical School of the University of Virginia.

Among prominent physicians from foreign lands who visited the New York Academy of Medicine during October were Dr. L. O. Zeno of Buenos Aires, Dr. A. A. Busch of London, Dr. Jose Izguierd, professor of anatomy at the University of Caracas, Venezuela; Dr. Harry G. Dorman of Beirut, Syria; Dr. Georges Loewy of Paris, and Dr. M. Mayeda of Osaka, Japan. Other prominent visitors were Dr. E. D. Fenner and Dr. D. O. Joachim of New Orleans, Lt. Col. Fred A. Haggard, of the Medical Reserve Corps, Ft. Worth, Texas; Dr. Hugh Davison of the Episcopal Hospital, Philadelphia, and Dr. H. C. Pedersen, of Fremont, Nebraska.

Gifts and Bequests.—The will of the late Mrs. Harkness provided cash legacies of $36,650,000 to charities and institutions of public welfare, among which were twenty million dollars to the Commonwealth Fund; one million, five hundred thousand dollars to the Presbyterian Hospital of New York City; three million dollars to Yale University; one million dollars to the American Museum of Natural History, and one million dollars to the New York Zoological Society. Among bequests that have been exceeded are those to the Commonwealth Fund, which has received $22,302,263, and Yale, which has received $25,000 more than the three million dollars. Among the gifts made by Mrs. Harkness between the time of the execution of her will and her death were the following: the gift to the Commonwealth Fund mentioned above; to the Presbyterian Hospital in the City of New York, $1,801,600, and to the Flower Hospital, New York Homeopathic Medical College, one hundred thousand dollars.

Society News and Notes.

At the twenty-seventh annual meeting of the New York State Conference of Charities and Correction, to be held at the Hotel Statler, Buffalo, November 16-19, public health in relation to the conference program will be discussed. The public session has been scheduled for the afternoon of Friday, November 19. The topics which will be discussed are: New Outlooks in Public Health, How Far Can Communicable Diseases Be Put Out of Business? Discussion and Demonstration of Administration of Toxin Antitoxin, and Twentieth vs. Eighteenth Century Health Methods.

* * *

The Harmon Foundation, with headquarters at 140 Nassau Street, New York City, supported by the American Red Cross, the Yale School of Nursing, the American

Nurses' Association, the Bureau of Nursing Education, the Henry Street Settlement, and a large number of similar organizations, is making a study of plans for pensioning nurses. The details have not as yet been made public, but a proposal has been made that nurses, during their periods of employment, pay one dollar a week, and that private patients be taxed a two dollar a week surcharge, and that this will provide a fund sufficient to give the nurses who subscribe to the plan a retirement annuity amounting to fourteen hundred yearly at the end of thirty years.

* * *

The New York Tuberculosis and Health Committee has recently completed an intensive study of 1,078 newsboys. The examinations showed that the percentage of physical impairments did not seem to be any higher than among boys not engaged in street trading. The outdoor life seems to balance the strain of long hours, the loads carried, and the nervous tension of the occupation. About two thirds of the boys examined were found to be backward in their school studies, but the investigators attributed this to the long and unusual hours of work rather than to mental or physical disability.

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Announcement has been made of the official disbanding of the Section of Psychiatric Social Work of the American Association of Hospital Social Workers at its fourth annual meeting at Cleveland last May. A new and independent organization has been established to be known as the American Association of Psychiatric Social Workers. The withdrawal from the parent organization was decided upon after a careful consideration of the development during recent years of psychiatric social work, which has been outside the hospital phase of the work and more closely allied to general social activities. The following were elected officers of the new American Association of Psychiatric Social Workers: president, Mrs. Maida H. Solomon, of the Boston Psychopathic Hospital; vice president, June Lyday, of the Iowa Psychopathic Hospital at Iowa City; secretary treasurer, Kathleen Ormsby, of the National Committee for Mental Hygiene, New York City; members of the Executive Committee, Sarah Ivins of the Bureau of Children's Guidance, New York City; Mary C. Jarrett, Boston; Grace F. Marcus, National Committee for Mental Hygiene; Katherine Moore, Michael Reese Dispensary, Chicago; Helen L. Myrick, Illinois Society for Mental Hygiene, Chicago; and Mildred Scoville, Commonwealth Fund, New York city.

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The American Medical Association of Budapest, Hungary, which was organized for the promotion of international post-graduate study, has issued a statement defining the nonmedical indications of artificial abortion. These are given as the social, the eugenic, and rape. The conclusions summarized are: Induction of abortion to save life or to prevent grave illness is a recognized remedy; Induction of abortion for nonmedical indications is prohibited by law, and should not be recognized by the profession, except in cases when extreme poverty may aggravate an otherwise improvable medical condition; Our knowledge of heredity is entirely too limited at the present time to permit us to seriously consider the eugenic indication; In rape we are confronted by a legal and social problem which we have no moral right to solve by the destruction of a potential human being.

* * *

Among meetings of societies to be held during November are the following: American Association of Railway Surgeons, Chicago, November 3-5; the Section of Biology of the New York Academy of Sciences, American Museum of Natural History, November 8; Southern Medical Association, Atlanta, November 15-18; the New York Microscopical Society, American Museum of Natural History, November 19; the Section of Anthropology and Psychology of the New York Academy of Sciences, American Museum of Natural History, November 22; the New York State Stomatological Medical Society, New York city, November 23.

* * *

Meetings at the Academy of Medicine early in November will include the following: stated meeting of the Academy, November 4, the papers of the evening to be by Dr. John M. Finney of Baltimore and Dr. Herbert S. Carter; a combined meeting of the Section of Genito-Urinary Surgery and the New York Society of the American Urological Association, November 3, with presentation of new instruments by Dr. S. R. Woodruff, and papers by Dr. William H. Meyer and Dr. Eugen Joseph of Berlin; the Section of Neurology and Psychiatry, November 9, with presentation of cases by Dr. E. D. Friedman, memorial address for Dr. Charles Bates Dunlap by Dr. George H. Kirby, and papers by Dr. I. S. Wechsler and Prof. August Wimmer, of the University of Copenhagen; the Section of Pediatrics, November 11, with papers by Dr. S. Adolphus Knopf and Dr. Charles Hendee Smith; the Section of Otology, November 12, with presentation of cases by Dr. Jay D. Whitham, and papers by Dr. Joseph H. Globus and Dr. Walter E. Dandy of Baltimore.

* * *

The New York Academy of Sciences has announced that the A. Cressy Morrison Prize, offered for the best thesis on the subject, What may be proved from our present knowledge as to the possibility or impossibility of released intra-atomic energy constituting an important source of solar and stellar energy? will be awarded in December of this year. The prize, which was at the time of announcement last May, limited to members of the Academy, is now announced as open to all. There are no change in conditions, except that the award has been increased to $250.

* * *

The Bureau of Courses of the Medical Faculty of the University of Vienna has announced a series of special annual courses in German to enable physicians to continue or complete their studies, or to avail themselves of the opportunity for training in specialties. Four times each year —in February, June, September and November—international Fortbildungskurse (finishing courses), each lasting two weeks, are given for those who wish to specialize in the branches of medicine. Information about these courses may be obtained by writing to the Kursbureau, Vienna Faculty of Medicine, Wien VIII, Schlösselgasse 22, for the first series; and to Dr. Kronfeld, Wien IX, Porzellangasse 22, for the second series.

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The Committee on Medical Education of the New York Academy of Medicine has prepared a useful synopsis of approved opportunities offered in Greater New York for graduate study in Roentgenology. These are in brief: six courses at the New York Postgraduate Medical School and Hospital; a postgraduate course for physicians only at the New York Hospital to be given by Dr. Webster W. Belden and Dr. John Remer; a special course for medical graduates at New York University and Bellevue Hospital Medical College; and an advanced course at the New York Eye and Ear Infirmary covering the Röntgenology of the head and accessory sinuses, and the localization of foreign bodies in the eye. A list is given also of the hospitals in Greater New York offering special interneships and externeships in Röntgenology.

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The ceremonies in connection with the opening of the new building of the New York Academy of Medicine, corner of Fifth Avenue and 103d Street, will include the following events: a dinner in honor of the new Honorary Fellows at the Waldorf-Astoria, Wednesday, November 17, at 7 P.M., addresses will be delivered by Dr. Samuel A. Brown, president of the Academy and by several of the Honorary Fellows; the opening exercises at the new building will be held on Thursday, November 18, at 3:30 P.M.; the invocation will be delivered by Rev. Henry Sloane Coffin, D.D.; Dr. Brown will make an address on The Academy —Its Services in Medical Progress, and Dr. Arthur B. Duel, chairman of the Building Committee, will speak on the Building of the Academy. The Fellows and their friends are invited to attend a reception and inspection of the new building to be held on November 18 from four till six o'clock. The first meeting to be held in the new building will be a stated meeting of the Academy in Hosack Hall, Fifth Avenue and 103d Street, Thursday, November 18, at 8:30 P.M. At this meeting there will be an election of Honorary Fellows and the Carpenter Lecture will be delivered by Dr. Michael I. Pupin of Columbia University; his subject will be Ionization and Chemical reactions. The administrative offices of the Academy will be transferred to the new building on November 8.

Book Reviews

THE BIPOLAR THEORY

A Bipolar Theory of Living Processes. By George W. Crile. New York: The Macmillan Company, 1926. Pp. 405.

This work may to many appear impractical and somewhat theoretical yet it seems to contain a more basic approach to protoplasmic life and activity than has so far been generally accepted. Here and there indications of Crile's summation have been manifested as is indicated in his bibliography, but an integration such as Crile attempts has not been presented. Crile would find much support from the modern school of psychopathology which finds symbolical manifestations of what he demonstrates in the laboratory. This being the case there must be validity behind his findings for the symbol is an integrated index to function—to life itself. The work of Ellice Macdonald, of Philadelphia, which has been published in this JOURNAL, tends to confirm all that Crile postulates. Perhaps a bit ahead of his time but tending to a basic foundation.

ALBUMINURIA

On the Relation between Albuminuria and Hydrogen Ion Concentration of the Blood and Urine. Inaugural Dissertation by Alfred Bjure. Upsala: Almquist & Wiksells 1925.

An excellent monograph in which the pathogenesis of orthostatic albuminuria, the albuminuria of exercise and the albuminuria of diabetes, is discussed. The investigation is clinical, the subjects of the study are patients under control on the medical service of the University Hospital at Upsala.

The monograph contains a critical analysis of the pertinent literature and a good bibliography. It represents a vast amount of work and is undoubtedly a noteworthy contribution to the subject.

CLINICS

Medical Clinics of North America. Philadelphia Number, Volume 10, Number 2. September, 1926. Philadelphia and London: W. B. Saunders Company, 1926.

The contribution by David Reisman is Diagnosis and Treatment of Acute and Chronic Myocardial Weakness, with special emphasis on chronic failure of circulation. The clinic of Joseph Sailer and Frank B. Lynch is on Backache in Blood Stream Infection, and includes five cases that present certain common features of a special type of backache although the actual pathology may vary. John H. Stokes discusses the differential diagnosis of psoriasis and syphilis, the treatment of lupus vulgaris, with special reference to the misuse of x ray and radium, the diagnosis of disseminate erythematous lupus, and the problem of malignancy in the presence of syphilis. Russell S. Boles presents a case of extraordinary dilatation of the stomach secondary to malignant obstruction of the pylorus with remarks on the early diagnosis of cancer of the stomach; also a case of Hodgkin's disease with primary involvement of the retroperitoneal glands. William D. Stroud offers a preliminary report on auricular fibrillation to show that there is a definite place for quinidine sulphate in the treatment of such patients. John C. Gittings presents malnutrition as the modern pediatric problem. Nondiabetic glycosuria is discussed by Leon Jonas. Burgess Gordon discusses the heart in tuberculosis. Henry LeRoy Bockus and Harry Shay discuss the subject of obstructive jaundice and present some interesting cases. Thomas Klein and Harold R. Keller discuss the treatment of chronic arthritis, especially with Coley's fluid. F. C. Knowles and John B. Ludy present some cases of pellagra. Martin E. Rehfuss shows interesting cases of organic duodenal pathology. William Egbert Robinson reviews the value of pain and certain reflex phenomena in diagnosis.

Medical Clinics of North America. Chicago Number. Volume 9, Number 5. Philadelphia: W. B. Saunders Co., 1926.

This number represents contributions from the Chicago members of the medical profession. As usual, the clinical side of various branches of medicine is stressed. The cases presented are thoroughly prepared, clearly stated and discussed from a didactic point of view. The important features are that, while the matter presented is of common interest to the profession, dealing with cardiovascular, gastrointestinal, neurological, blood and metabolic diseases, etc., the cases employed to illustrate the conditions in question frequently embody unusual features. Points which ordinarily may lead to confusion are elucidated, and methods for differentiation and classification of the cases dealt with exposed. The value of these volumes lies not only in the character of the cases presented, but also in the methods used in working them up, both of which should prove of great help to the busy general practitioner.

DIETETICS

Practical Dietetics for Adults and Children in Health and Disease. By Sanford Blum, A.B., M.S., M.D. Second Revised Edition. Philadelphia: F. A. Davis Co., 1926.

The second edition of this useful book is very welcome. The arrangement is by disease in alphabetical order. The presentation is direct, clear, and interesting. Under each head, a type patient is considered, a type dietary outlined, and this is then followed by the more usual lists of foods allowed and prohibited, grouped in classes.

It is suggested that future editions include diets for the various cancers of the alimentary canal and for ulcerative colitis.

X RAY EXAMINATION OF GASTROINTESTINAL TRACT

La Radiologie in médecin praticien. Radiodiagnostic des maladies de l'appareil digestif. Par R. Ledoux-Lebard. Paris: Masson et Cie, 1925.

Ledoux-Lebard gives a concise and practical description of all the methods used in x ray examinations of the gastrointestinal tract and also a detailed account of a correct interpretation of the pictures obtained.

The practitioner will also find in this useful book the indications for the use of the x ray photographs and fluoroscopy.

PROCTOLOGY

A Manual of Proctology. By T. Chittenden, Ph.B., M.D., F.A.C.S. Second Edition, Thoroughly Revised. With 101 engravings. Philadelphia and New York: Lea & Febiger, 1926. Pp. 294.

This manual, now in its second edition, is a useful publication. Crowded into less than three hundred pages are the rich fruits of much practical experience. This is presented in such a way that not only the general practitioner, but even the surgeon should have frequent occasion to refer to this volume. The style and arrangement are particularly fitted for ready reference.

It is especially to the man in general practice that the work must make its greatest appeal. Such common and important topics as the catarrhal diseases of the rectum and colon, ulcerative colitis, anal fissure, hemorrhoids, pruritus, and cancer are very adequately presented. In all cases, the palliative, as well as the radical treatment is described in detail.

The concluding chapter of this book, now in the second edition, is on radical operation for cancer of the rectum. It is written by Dr. R. C. Coffey, of Portland, Oregon.

FIBROUS OSTEODYSTROPHY

Pathologisch-Anatomische Studien Uber Die Osteodystrophia Fibrosa (Sog. Ostitis Fibrosa v. Recklinghausen). Akademische Abhandlung zur Erlangung der medizinischen Doktorwürde mit Genehmigung der weiterfahrenen Fakultät zu Upsala. Vorgelegt von Ture Stenholm, Med. Lic., Fil. Mag., Norrl. Aus dem Pathologischen Institut des Städtischen Krankenhauses im Friedrichshain zu Berlin. (Abt-Direktor: Prof. Dr. L. Pick.) Upsala: Almquist & Wiksells Boktryckeri-A.-B., 1924. Pp. vi-211.

This monograph was presented as a graduation thesis for the medical degree. Under the direction of L. Pick twelve cases of this disease were carefully studied. Heretofore, only the gross anatomy of the macerated bones were studied and attention was paid almost exclusively to the histology of the disease, with the result that an incorrect conception of the disease prevailed. The author devoted himself to a combined study of both elements. He also studied not only the bones affected but also all the other bones of the body, which is necessary in order to gain a correct insight into the extent of the pathological changes and the development of the disease. In this way the different stages of the disease are met and studied. The very early stages of the disease can be studied only in bones that are macroscopically still intact. Such a study requires investigation not only of the fresh necropsy material (bones) but also of the wet preserved and macerated specimens. In addition, the endocrine glands were also investigated. Twelve cases were studied clinically and pathologically.

The following conclusions are drawn:

1. The term "ostitis" is incorrect as there is no anatomical or histological evidence of a chronic inflammation.

2. The disease is produced by nutritional disturbances of the bone and shows the character of a degenerative reparative process. Hence the term "fibrous osteodystrophy" is more appropriate.

3. The same condition may apparently be produced by originally different factors, but they all have the fundamental nature of a nutritional disturbance.

4. Fibrous osteodystrophy is an independent entity which must be sharply differentiated from true osteomalacia and rachitis.

5. The histological picture of this disease may also be seen in circumscribed areas in other diseases, occasionally in osteomalacia, severe rachitis, Möller-Barlow disease, in the vicinity of chronic osteomyelitides or malignant bone tumors, and in bone echinococcus, which diseases also show a reaction to nutritional disturbances of bone—a specific sign.

6. The lacunar resorption here also is the only form of destruction. Therefore all the osteoid ridges of bone are new formations of bone substance, which is the result of regular osteoblastic activity and, occasionally, of direct metaplasia.

7. The associated tumors in certain cases are neither inflammatory products nor blastomas and they indicate the end stage of the resorptive process.

8. Fibrous osteodystrophy is up to the present time the only demonstrable basis for the development of bone cysts. These usually are situated in the brown tumors, but also occur occasionally in areas free of tumors.

9. The cysts apparently originate in dilated veins and lymph vessels.

10. The variations in the forms of this disease are determined by the following factors: a, skeletal involvement—generalized, single, or transitional forms; b, involvement of single bones—total or partial; c, localization in bones—cortical or endosteal or medullary; d, change in volume of the bone—hyperostotic or hypostotic; e, quality of the resulting bone tissue—porotic or sclerotic; f, associated symptoms—absence or presence of tumors or cysts; g, age incidence—infantile, juvenile, adult, or senile.

11. The existence of the monostotic form was first described by the author.

12. The medullary form was associated with cysts in one case.

13. The senile porotic generalized form is the same as the socalled Paget's disease of bone, and is associated with marked arteriosclerotic changes in the arteries of the bone marrow and the nutrient arteries with the resulting nutritional and functional disturbances of fibrous osteodystrophy.

14. In the hypostotic form there is craniotabes, as in rachitis.

15. The partial involvement of a bone may (without the presence of brown tumors or cysts) closely resemble the x ray picture of a neoplasm.

16. Some of the cases of socalled leontiasis ossea belong to this group of fibrous osteodystrophy; in others some other genesis is undoubtedly responsible.

17. The parathyroid tumors observed in fibrous osteodystrophy are not blastomas, but are purely benign parenchymatous hyperplasias, secondary to the bony involvement and the result of the demand for increased function.

18. Positive parathyroid involvement is observed almost regularly in cases with brown tumors and cysts, which represent the final stage of the changes in this disease.

19. In general, there is a parallelism between parathyroid enlargement and the disturbance of calcium metabolism. But the intensity of this disturbance is measured not only by the intensity of the bony changes, but also by the duration of its course.

Medicoliterary Notes.

Interesting features of the October issue of the *American Journal of Public Health* are the initial article, The International Sanitary Conference, by Surgeon General Hugh S. Cumming; an editorial paying tribute to the life and work of Dr. Victor C. Vaughan, who celebrated his seventy-fifth birthday on October 27th; and a supplement giving in detail the requirements for public health degrees in the United States and Canada.

* * *

The first issue (October) has appeared of a new periodical bearing the title *Children, the Magazine for Parents.* This number contains articles entitled: Parents, We Are Here! by the editors; A Magazine for Parents, by George J. Hecht; The Stuff Contentment Is Made Of, by Dorothy Canfield Fisher; Before Your Child Goes to School, by Helen T. Woolley, Ph.D.; Inside Tips for Fathers, by Ernest R. Groves, Ph.D.; The Thompson Twins Talk Things Over; Do You Know Your Child's Teacher? by Robert E. Simon; A Mother to Ten Thousand, by Marion Brockway; Salesmanship for Parents, by Harry Goldsmith; Janet Kept Her Vow, by Carolyn Hosmer Rhone; Checkening, by Irma Morris; Two's Company; What's Three? by Clara S. Littledale; Shall Jack Play Football? by Arthur R. Forbush, and Fruit Juices and Child Health, by Dr. Alfred F. Hess. The magazine is published by the Parents' Publishing Association, Inc., 353 Fourth Avenue, New York City. Its purpose is stated as that of assisting parents to bring up their children by setting before them the results of investigations made by physicians, psychologists, educators and other authorities.

* * *

Public Health Reports for October 1st is devoted chiefly to a description with illustrations of an experimental water purification plant constructed and now being operated by the U. S. Public Health Service on the grounds of the laboratory of stream pollution investigations at Cincinnati, by Frederick J. Moss, assistant sanitary engineer of the Service; followed by a preliminary review of the results of primary experiments in the same line, by H. W. Streeter, also sanitary engineer of the Service.

* * *

The course of eighteen lectures now being given at the New School for Social Research, New York City, by Dr. S. Ferenczi of Budapest, and which will continue until February 15, 1927, will include discussion of the topics of suggestion and psychoanalysis, the development of the ego and the instincts, the ego and the personality, the Freudian metapsychology, the technic of psychoanalysis, the chief forms of neurosis and psychosis, and character and its possible alterations through psychoanalysis.

* * *

Methods and Problems of Medical Education, Fifth Series, published by the Division of Medical Education, of the Rockefeller Foundation, includes descriptions, excellently illustrated of the various departments pertaining to medicine and related subjects of the Washington University School of Medicine at St. Louis, Missouri; the department of physiology of the University of Pennsylvania; the department of physiology of Peking Union Medical College; the various similar departments of McGill University, Montreal; the out patients' department of the Royal Victoria Hospital at Montreal; the mental prophylaxis service of the Department of the Seine, Paris; the laboratory and dispensary building of the Presbyterian Hospital of Philadelphia; the modern mission hospital in Soochow, China; the regional centre for combatting cancer at Toulouse, France; the charting of clinical records at Mt. Sinai Hospital, New York City; the surgical didactiscope and asciatic lamp at Montpellier University, France; the Institute of Pathology at the University of Utrecht, Netherlands; and the Students' Unit Medical Laboratory at the University of Wisconsin.

* * *

Nine rattlesnakes and a large number of moccasins at the Bronx Zoo recently did their bit for the cause of medicine by contributing in a single day enough venom to kill—or cure—a score of people. The importation of antisnake serum from Brazil is forbidden by a regulation of the U. S. Public Health Service, so Dr. Afranio da Amaral, one of Brazil's foremost experts, now working at the laboratories of the Mulford Company at Glenolden, Pa., Dr. Thomas Barbour of Harvard University, and the United Fruit Company are cooperating to produce a supply for America. Dr. Raymond L. Dittmars, curator of reptiles at the zoo, is reported as having stated that in about four months there will be a sufficient supply in this country to meet all emergencies. A simple apparatus for extracting the poison had been prepared, according to an account in the *New York Times,* consisting of a rubber diaphragm stretched across the top of a small vial, the whole having been screwed to a table. The snakes were brought into the room in heavy ashcans and encouraged to plunge their fangs into the rubber, thus discharging the venom into the vial.

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Chicago's Health for October, 1926, the weekly bulletin issued by that city's Health Department, is devoted to a description of the relief measures organized and carried out by Chicago for the sufferers in the Florida hurricane, especially through the *Chicago Herald Examiner's* Illinois Central Relief Train.

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Crime and the Alarmists is the title of an interesting article in *Harper's Magazine* for October by Clarence S. Darrow.

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The continent of Australia has been divided into circular districts each with a radius of two hundred miles to be covered by flying doctors. In this way a physician in government employ may be summoned to any place in the whole country where he may be needed and reach there in a comparatively short time.

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Dr. C. Ward Crampton, director of the Health Service Clinic of the Post Graduate Medical School and Hospital of New York City, has contributed to the *Nation's Health* for August an interesting account of "the friendly clinic" as a help to the cause of health examinations as illustrated by the work of the Health Service Clinic, which was established as late as January of 1925. Another significant article in the same issue is entitled the Clean and Safe Milk Campaign to Stimulate Use, by Dr. S. J. Crumbine, general executive of the American Child Health Association, New York City.

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One of the largest firms of pearl dealers in Japan has had built in the Grand Imperial Shrine of Isé a miniature pagoda, in which more than ten thousand pearls are used. This monument was publicly dedicated recently to the "souls" of pearl oysters, which, according to a firm belief of the Japanese, must be propitiated whenever they are robbed of their pearls.

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Dr. Charles V. Chapin, superintendent of health of Providence, has been recently quoted as declaring that the motor car is causing the extinction of the common house fly, according to the *Science News Letter.* "Each year, as the automobiles have increased in number," Dr. Chapin states, "the flies have diminished. . . . The reason lies in the fact that the auto has done away with the demand for horses. This being so, there are fewer stables today than ever before. Naturally this has resulted in a decrease of manure piles, which have been the principal breeding places of flies."

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The Upper Mississippi River Wild Life and Fish Refuge is in process of being established as soon as the land for it has been acquired. This is the chief American airway for migratory birds, so well located to serve as a feeding ground and resting place, and as a natural retreat for animals. The water abounds in many kinds of fish and mussels which will also be protected. The Biological Survey and the Bureau of Fisheries will be the guardians of the huge estate, which will extend from Rock Island along both sides of the river almost continuously through Illinois, Iowa, and Wisconsin to Minnesota, a distance of 300 miles.

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A recent important publication of interest to physicians is *A Popular Encyclopedia of Health,* by Lee K. Frankel and Donald B. Armstrong, published by Albert and Charles Boni, New York.

Abstracts from Current Literature

NEUROPSYCHIATRY

Meningioma of Intracranial Sinuses.—E. B. Towne (*Annals of Surgery,* 83:3) states that meningiomas, or dural endotheliomas, are encapsulated tumors which do not invade the cortex, but which frequently invade the dura and the overlying cranial bone. They arise from nests of arachnoid cells which often lie on the arachnoid villi, which project into the intracranial venous sinuses. Theoretically, meningiomas might invade the venous sinuses of the dura. Only one example of invasion, without occlusion of the sinus, has been found in the literature. Two additional cases are reported. In one, the superior longitudinal sinus was occluded. In the second, a meningioma had invaded the inferior longitudinal sinus and grown extensively in the venous system, terminating in the superior vena cava. The tumor had secondarily invaded and broken through the venous walls in many places.

Such invasion of the venous system may convert a meningioma, which is otherwise favorable for surgical treatment, into an irremovable tumor. The surgeon should examine the adjacent venous sinus for possible involvement when the tumor is attached to the dura. Necropsy in the second case suggested that an early intravenous extension, before secondary invasion of the wall of the vein, might be successfully excised.

Staphylococcus Meningitis.—T. S. Moise (*Surgery, Gynecology and Obstetrics,* 42:3) asserts that the sacrolumbar region is a common site for developmental anomalies among which are included the above mentioned congenital dimples, sinuses, cysts, and tumors. These cases rarely present a connection between the spinal canal and the skin surface.

Other congenital lesions occurring in this region are instances of spina bifida, with all gradations from an unnoticed spina bifida occulta with no external evidence of a defect to a fusion of the spinal cord with the integument. The cases showing a connection between the spinal canal and the exterior do not as a rule survive infancy. The author reports a case which showed a congenital sacral sinus with an underlying spina bifida and a direct connection between the skin and the spinal canal. The occurrence of a pilonidal sinus with an underlying spina bifida and an irregularity in the fusion of the sacral vertebræ furnished additional evidence in favor of the view that such sinuses are developmental anomalies resulting from a failure of the medullary canal to become completely obliterated. This lesion had given the patient no cause for worry until the eighteenth year of his life when it served as the portal of entry for a meningeal infection. A sacral laminectomy with drainage was performed with subsequent recovery from the meningitis.

Traumatic Neuritis of Ulnar Nerve.—H. Platt (*British Journal of Surgery,* 13:1) divides ulnar nerve lesions into three main groups and outlines his points of emphasis for each group as follows:

1. Ulnar nerve lesions associated with recent fractures of the lower end of the humerus.

Involvement of the ulnar nerve is a rare complication in recent fractures of the lower end of the humerus. The common type of fracture to be accompanied by a lesion of this nerve is separation of the internal condyle. The nerve lesion is usually a primary contusion—a physiological block without loss of continuity. The symptoms are slight, and rapid spontaneous recovery tends to occur. In exceptional cases the primary neuritis may increase in severity during the early stages of treatment, and the lesion may pass etilogically into the secondary class. A secondary ulnar neuritis of this type may be an unavoidable sequela. In such cases a friction or tension neuritis is produced as a result of a disturbance of the normal relation between the nerve and its bed. A secondary neuritis may also be induced by injudicious treatment, i.e., the use of forced passive movements of the elbow in the first few weeks after the injury. Under similar circumstances a secondary neurities may arise de novo. In all cases of severe and persistent neuritis the nerve trunk should be explored and displaced to a new bed in front of the internal condyle.

2. Late ulnar nerve involvement after certain fractures.

Late involvement of the ulnar nerve (delayed ulnar palsy) is a characteristic remote sequela of certain fractures of the external condyle sustained in early childhood. The clinical picture embraces three phases; a, The fracture in early life; b, The latent period—this is rarely less than ten years; c, The development of neuritis. The neuritis is a friction or tension lesion. It is predetermined by the existence of a gross cubitus valgus deformity. The nerve trunk is compelled to take a longer course, and becomes stretched like a bowstring in the shallow postcondylar groove. The onset of symptoms is often associated with a period of strenuous use of the limb in which repeated flexion movements of the elbows are carried out. Operative treatment is indicated in all cases. It is necessary to relieve the nerve from friction, and to shorten its course. Two procedures are worthy of adoption, namely, anterior transposition of the nerve, and supracondylar osteotomy.

3. Recurring dislocation of the ulnar nerve.

There are special types of ulnar nerve injury which are primarily determined by an alteration in the normal relation between the nerve trunk and its bed in the postcondylar groove. Under such conditions the nerve becomes exposed to the cumulative trauma of repeated over-stretching or friction. The nerve lesions produced in this way are ordinarily of the incomplete type, and may be described under the broad title of traumatic neuritis. Three clinical groups may be distinguished: Ulnar nerve injuries associated with recent fractures of the lower end of the humerus. In these spontaneous recovery is the rule; operation is called for in rare cases of severe and persistent neuritis. Late ulnar nerve involvement after fractures. Recurring dislocation of the ulnar nerve. In the two latter groups operative treatment is indicated as a routine. There is one simple and effective operation which is universally applicable in all cases of traumatic neuritis of the ulnar nerve in the postcondylar groove, viz., anterior displacement of the nerve trunk.

Median Nerve Lesions.—D. Crile (*Surgery, Gynecology and Obstetrics,* 42:3) has observed that in fractures of the arm in which the median nerve is involved certain color phenomena may be produced by constricting the arm at diastolic pressure. These color or vasomotor phenomena correspond precisely to the anesthetic area and gradually diminish both in intensity and extent as sensation returns.

The author says that the value of this sign seems to be in its objective qualities. It is a sign which cannot be feigned and as such is of great value in differentiating the malingerer from the unfortunate. It presents the means of delineating in a graphic manner cutaneous areas the nerve supply of which is blocked. It supplements the tactile tests and should be a useful means of studying the physiology and pharmacology of vasomotor control. Its value lies in the facility with which it may be produced in recent cases contrasted with the length of time required to produce visible vasomotor disturbances as they appear in chronic cases. The appearance of this sign in two cases does not, of course, establish it as a constant or unvarying sign of peripheral nerve lesions, and therefore the absence of this sign is of no importance. However, the presence of this sign establishes objective evidence of a nerve lesion.

Nerves of the Stomach.—E. D'Arcy McCrea (*British Journal of Surgery,* 13:52) puts forth evidence to show the following:

That the anatomical distribution of the nerves to the stomach is sufficient to account for instances of reflex spasm or of incontinence of the pylorus in the case of gastric or duodenal ulcer, and of spasm or of atony of the body of the stomach with duodenal ulcer. That the "ulcer bearing" area of the stomach correspondens to the area in which the nerve branches are chiefly grouped. That local spasm with resultant anemia is a probable cause of the chronicity of ulcer, aided by factors such as retention and infection set up by reflex spasm. That certain of the "gastric neuroses" may be exactly simulated by the resection of either the vagi or the splanchnic nerves. That the results of nerve stimulation and therefore of nerve irritation can also simulate certain of these "neuroses". That the phenomena grouped under the title of the nervous dyspepsias or gastric neuroses

may have at least three sources of origin; and that certain of these conditions will probably come to be regarded as preulcerous. These sources are: Peripheral irritation of the nerves, manifested by gastric signs and symptoms, lesions of the nerve paths, and central disorders, possibly of endocrine origin. That as a logical sequence of the foregoing, operations upon the nerves are indicated in certain disorders and diseases of the stomach. That such operations are feasible, that in animals their results may be forecast, and that certain of them have been performed on man.

CARDIOVASCULAR DISORDERS

The Aftereffects of Diphtheria on the Heart.—The report of Jenner Hoskins (*Lancet*, June 12, 1926) is based on sixteen cases of diphtheria, in which the patients were sent to him for clinical and electrocardiographic examination on their discharge from the hospital. All these patients had definite signs of heart involvement during their stay in the hospital. Their ages varied from three to nineteen. The length of stay in the hospital averaged eighty-six days. In none of the cases were cardiac abnormalities noticed during the first week of the disease, the earliest recorded being on the eighth day and the latest on the thirteenth. The following were the principal abnormalities found while the patients were still in the hospital: Tachycardia, present in all but one case; cardiac enlargement was found in three cases; alteration of the first sound at the apex was noted in seven cases, reduplication being present in four cases; reduplication of the second sound at the apex was found in two cases; premature beats were noted in two cases, and both occurred in the fourth week.

On discharge, the sixteen patients differed from normal children of the same age in the following respects: 1, The higher rate of the heartbeat; 2, the presence of cardiac symptoms in half of the cases; 3, the diminished cardiac reserve; 4, the presence of heart abnormalities in almost all cases; 5, the changes in the electrocardiogram, notably the presence of the Q. R. S. complex in five of the cases, and the alteration in the character of the third lead.

The author believes that it is fair to assume that the effect of the diphtheritic toxin on the heart, in those cases where it has become involved during the course of the disease, is a more lasting one than is generally recognized. It is therefore of the utmost importance that patients in whom cardiac symptoms and abnormalities have been discovered during their stay in the hospital, shall be thoroughly examined, both clinically and electrocardiographically, on their discharge before being allowed to return to their ordinary avocations, and that if the heart is found to be still affected they should be kept under observation until it has either regained the normal or has reached a stationary condition of recovery.

Surgical Treatment of Angina Pectoris.—D. Danielopolu (*British Medical Journal*, January 30, 1926) maintains that in the Jonnesco method the division of certain nerves, such as the cardiac accelerator fibers, involves danger, while nerves which may be divided usefully and without injury are left untouched. With the author's method it is the former which are left intact, and many nerves—possibly more than in the Jonnesco operation—which contain sensory cardioaortic fibres, are severed. It is not prudent to continue this operation, which has been followed by fatal results, before trying a method which appears to be wholly harmless and probably very effective.

The author's operation has its contraindications; it should not be employed if signs of myocardial insufficiency are present, as, for example, when anginal attacks are complicated by pulmonary edema, which indicates the presence of extensive myocardial degeneration. Even so Jonnesco's operation would appear to be much more dangerous than the author's. The number of methods which the author advises may seem surprising but the methods are successive, each one perfecting a preceding one. Some proved excellent from the first, but in each new operation division of more sensory cardioaortic fibres has been attempted in order to make the benefit more complete. The operation, however, should be as complete as possible in each case, resection of the cervical sympathetic being supplemented by section of the vertebral nerve and the communicating branches, the second, third and fourth spinal nerves, the anastomoses connecting the superior cervical ganglian with the cranial nerves, the vagal fibres descending into the thorax, and of certain branches of the vagus, in so far as anatomical peculiarities or technical difficulties allow. Cervical sympathectomy alone is sometimes very effective, but even this may sometimes be impossible because of the general condition of the patient. In such cases treatment should include simple section of the cervical sympathetic bundle, with or without section of the vertebral nerve, intrathoracic branches of the vagus, and the communicating rami. The number of sensory cardioaortic fibres will be reduced and the pressor reflex, which is the primary cause of the anginal attacks, will be diminished. When clinical improvement has started the operation may be completed at a later date.

In addition to the classical angina pectoris, surgical treatment may be considered in abdominal angina. Some of these cases are only angina pectoris with an unusual pain distribution, and may be relieved by the surgical treatment applicable to ordinary angina pectoris; in other cases, however, a real abdominal syndrome exists, due to arteritis or atheroma in the abdominal aorta, the celiac trunk, or the gastrointestinal arteries. Here the syndrome is referable chiefly to sensory fibres supplying the abdominal viscera. To prevent the attacks in such cases the solar plexus must be treated.

The practical conclusion appears that surgical treatment of angina pectoris is of general application. Cases must be well selected, and the completeness of the operation will depend upon the patient's condition. The author cannot agree with Mackenzie, who has stated that anginal patients should never be treated surgically. The Jonnesco method involving the removal of the stellate ganglion may perhaps be abandoned, but the method which the author suggests is far more hopeful, and offers much promise in practice.

Necessity of Removing Bacterial Foci of Infection in the Treatment and Prevention of Endocarditis in Children.—Myer Solis-Cohen (*Archives of Pediatrics*, July, 1926) emphasizes the fact that infectious microorganisms, rather than diseased tissue, constitute a focus of infection. Removal of diseased tonsils and flushing and aeration of paranasal sinuses do not remove all the infecting microorganisms from the upper respiratory tract. To lessen the chances of reinfection of the endocardium, it is necessary to remove the bacterial focus of infection in cases of endocarditis. To eliminate a bacterial focus, sufficient antibodies must be developed to destroy the infecting microorganisms or restrain their growth or neutralize their toxins. Antibody production may be stimulated by the injection of specific antigens. To contain in sufficient quantity the specific antigens, the vaccine must consist chiefly of microorganisms that are infecting the patient. It is believed that organisms that are pathogenic for a patient, and hence infecting him, can be differentiated from organisms that are nonpathogenic for him, to which he stands in the relation of a carrier, by means of the pathogen-selective method of culture. It may be possible in many instances to prevent the occurrence of heart disease by removing bacterial foci of infection in cases of chorea, arthritis, tonsillitis, and other conditions where endocarditis is recognized as a possible complication.

Great Dilatation of the Left Auricle.—C. F. T. East (*Lancet*, June 19, 1926) states that in mitral stenosis it is usual to find some degree of dilatation of the left auricle together with some attempt at hypertrophy. The state of the chamber at autopsy must depend on the pressure inside it during life, and the condition of the wall after the carditis which affected it along with the mitral valve and pericardium. The left auricle attains a greater degree of dilatation than any other chamber of the heart for three reasons—because it has thin walls, has no safety valve into the great veins like the right auricle, and is being filled by both ventricles at once when there is mitral reflux.

The great transverse enlargement of the left auricle seems rather remarkable. In the slighter degrees of enlargement it extends backward under the bifurcation of the trachea. It can readily be seen when the patient is screened in the right oblique position as a rounded shadow projecting backward from the heart shadow into the retrocardiac space. A little larger and it fills up the space under the arch of the aorta. Cases have been reported in which it has pressed on and interfered with the function of the recurrent laryngeal nerve. It may also press on the esophagus. Very little enlargement takes place to the left. The arch of the aorta passes over the auricle, and then down, behind it, and a little to

the left of it. The left ventricle lies in front and to the left of it, and is in all probability enlarged. The spine lies behind it, so it enlarged to the right and rather forward. A very great increase in size occurs of that small piece of the wall of the left auricle that lies between the root of the right lung and the interauricular septum a little to the front.

The lesser degrees of enlargement can only be detected by röntgenographic examination in one of the oblique positions, preferably the right anterior oblique. Probably quite extensive degrees of dilatation occur not infrequently and are not detected because they give no physical signs. If the shadow projects to the right of the heart, as seen in an anteroposterior view, it may escape recognition as being that of the left auricle, unless the direction of its enlargement is borne in mind. It does not give its distinctive physical signs until it is right up against the chest wall. There is no doubt that oblique röntgenographic examination is most helpful in cases of obscure cardiac enlargement.

Mode of Death in Various Types of Heart Disease.—Frederick A. Willius (*American Journal of the Medical Sciences,* April, 1926) in a review of 330 cases in which death occurred as the direct result of cardiac disease, clinically or pathologically determined, the types were found to be as follows: Arteriosclerotic cardiac disease twenty-five per cent.; myocardial infarction, eleven per cent.; hypertensive cardiac disease, twelve per cent.; cardiac hypertrophy associated with obesity, 0.6 per cent.; acute myocarditis, 0.3 per cent.; cardiac failure from mechanical causes, 0.6 per cent.; chronic endocardial valvular disease, twenty-eight per cent.; bacterial endocarditis, nine per cent.; pericardial disease, five per cent.; cardiovascular syphilis, eight per cent.; congenital cardiac disease, one per cent. Sudden death occurred in 125 cases, thirty-eight per cent., while death from gradual cardiac failure occurred in 205 cases, sixty-two per cent. Embolic phenomena occurred in fifty-eight cases. Necropsy was performed in eighty-five per cent. of the cases reported.

Influenza Bacillus Endocarditis.—Ella Hutzler Oppenheimer (*Bulletin of the Johns Hopkins Hospital,* May, 1926) reports a case of endocarditis due to Bacillus influenzæ because the findings suggest very closely, clinically and pathologically, those of a viridans endocarditis. Not until blood cultures revealed the Pfeiffer bacillus was it suspected that the case was anything but a typical instance of viridans endocarditis, and at autopsy the lesions were indistinguishable. The patient was a young man of twenty-eight who one and a half years before admission had been refused life insurance for a "bad heart." Eleven months before admission he had suffered from a cold with severe shooting pains over his left side, suggestive of a cerebral accident. The case, while caused by the Pfeiffer bacillus, clinically showed the protracted course, cardiac disease, splenomegaly, hemorrhagic nephritis, eruption, fever and clubbing of the digits with an onset suggestive of a cerebral accident so characteristic of Streptococcus viridans disease. Anatomically, the type of the vegetations on the chronically diseased and thickened valves, the widespread petechiæ, infarcts and embolic nephritis fit in detail into the same picture.

Clinical Experience with Cardiazol—Conrad (*Fortschritte der Medizin,* No. 6, 1926) said that cardiazol was used on more than fifty patients in the gynecological section of the Rudolph Virchow Hospital, Berlin, mostly cases in which operation had been performed. Some of these patients were women who had been admitted to the hospital for sepsis following attempted abortion, and had heart and lung complications. No injurious byeffect and no cumulative action of the drug were observed after frequent subcutaneous injections for days at a time. The pulse in the case of one patient, with absence of radial pulse after a long operation, recovered within two minutes after subcutaneous injection of one ampule of cardiazol, and remained regular and strong under further injection at two hour intervals. From the second to the fourth day one ampule of cardiazol was given three times a day. Another patient had lost a great deal of blood and the pulse during operation became thready, very rapid and hardly detectable. Respiration was superficial. Three minutes after the subcutaneous injection of cardiazol there was a marked improvement in the pulse and the respiration became deeper. Under further doses of cardiazol the pulse fell the next day to between 80 and 90 and was strong and regular. Cardiazol gave excellent results in conditions of collapse resulting from long operations, great loss of blood and long anesthesias. The drug evidently acts directly on the heart. When given over a longer period a sort of digitalis pulse developed, the pulse became slower and more regular, the volume per beat increased and the blood pressure rose slightly. The author holds that an advantage of cardiazol which is particularly important in operative gynecology is the fact that, unlike camphor, it has no paralytic action on smooth muscle. Therefore Conrad prefers cardiazol as a heart stimulant after gynecological operation in which there is a peculiar tendency to paralysis of the intestine.

Changes in Ventricular Rate Associated with Stokes-Adams Attacks in Complete Heart Block.—C. E. K. Herapath (*Lancet,* March 27, 1926) reports a case in which a continuous electrocardiogram of the whole of a Stokes-Adams attack is reproduced. It suggests an explanation of the attacks of ventricular asystole, which attacks in a case of complete heart block where abolished by an injection of adrenalin.

In this case of complete heart block with a normal supraventricular rhythm an irritable focus develops in the right branch of the auriculoventricular bundle; in the early stages this produced occasional premature ventricular contractions, a little later this irritability increases and the focus produces a simple ventricular tachycardia which displaces the original rhythm. This tachycardia exhausts the rhythmicity of this newly formed pacemaker and ventricular asystole occurs. After a rest the old site of stimulus production tries to assume activity, but is again disturbed by the new rhythm, which slowly begins a rhythm of its own. After some time the old rhythm does manage to resume its activity, but it is soon overwhelmed by another attack of tachycardia from the new site of stimulus production, and so on. An injection of adrenalin is given, and this so stimulates the cells of the bundle that the old rhythm is once more made powerful enough to take control. In a few days this rhythm disappears and the new site of stimulus production permanently establishes its claim to be the ventricular pacemaker. No ventricular standstill occurs when this change is made, because the new rhythm is now capable of starting as promptly as necessary. There is nothing new in this explanation, but there is proof in the electrocardiographic tracings, and when more of these cases have been analyzed by this means an explanation of all the varying attacks of ventricular asystole may be found.

The Abuse of Rest in Cardiac Therapy.—William D. Reid (*Boston Medical and Surgical Journal,* June 3, 1926) contends that rest is too frequently prescribed in cardiac therapy. The unintended harmful effects that may follow the prescribing of rest to cardiac patients may be classified for the moment under three headings.

1. *Physical.*—It is well known that in the elderly, prolonged rest in bed has a very real danger in that it is sometimes difficult to get the patient out of bed again; congestion of the lungs and hypostatic pneumonia may result. Much loss of tone of the bodily musculature is prone to occur and is not always readily regained. It is also conceivable that there may be some loss of function of the various reflex mechanisms which do so much to perfect the circulation of the blood.

2. *Psychic.*—Ordering rest in bed in any or all heart conditions is sometimes the worst thing that can be done. To condemn the patient to idleness is to anchor and perpetuate any neurotic tendency. There may result a fixation of the idea of invalidism.

3. *Economic.*—It is a serious matter to prescribe a treatment which may cost an adult his position on which his livelihood depends. In children, it is true, the loss of time is less important as it merely means the loss of their class in school. In some children, however, this is attended with considerable psychic trauma. It seems fair to hold that a very definite benefit must be achieved to compensate for the loss of time involved.

Suitable exercise, it will be conceded, is part of good hygiene. Individuals affected by diseased hearts are handicapped; why deprive these handicapped persons of the benefit of exercise? Is it not true that the prescribing of rest is so helpful in some cases that these good results may be said to carry the burden of the all too frequent instances

where rest is neither indicated nor attended with any degree of benefit? It would seem that a similar situation exists as regards digitalis therapy, which is too often fruitlessly applied.

It is often held that the patient should be in bed when digitalization is being accomplished, but experience shows that in many instances this can be safely accomplished in ambulatory patients. Notwithstanding the fact that there are symptoms referable to the heart in the condition known as effort syndrome, irritable heart, and by various other terms, such as the soldier's heart, etc., which it is true is not in any proper sense actual heart disease, it was clearly shown in the recent war that many of these patients could be made fit by gradually increasing exercise. The successful hardening of the soldiers by exercise should not readily be forgotten in civil practice. Too much rest was the worst thing possible for these men. And finally, although it has been sufficiently indicated above that the writer believes that rest is often a valuable and sometimes an essential part of the therapeutics of heart disease, the reader is again cautioned against assuming that this paper deprecates all use of rest in cardiac therapy.

Cerebral Manifestations of Paroxysmal Tachycardia.—Arlie R. Barnes (*American Journal of the Medical Sciences*, April, 1926) found such cerebral manifestations as vertigo, hemianopsia, temporary blindness, fainting, falling with or without loss of consciousness, and epileptiform seizures in fifteen of the 104 cases of paroxysmal tachycardia which he studied. These manifestations occurred most frequently in cases in which the origin of the impulse and its propagation in the heart varied the greatest from normal. The presence of these manifestations does not affect the prognosis in attacks of paroxysmal tachycardia; the prognosis depends on the type and degree of the underlying cardiac damage.

SYPHILIS

Guides in Syphilis Therapy.—Leo Hauck (*Urologic and Cutaneous Review*, May, 1926) states that the advantage of the combination mode of treatment of syphilis is that the salvarsan plays the rôle of an intense, rapid destroyer of the spirochetes while mercury and bismuth, on the contrary, engage in a process of gradual destruction. The strongly parasiticidal property of salvarsan renders this substance suitable for the treatment of the early stage of syphilis. Bismuth is now considered to be of equal value as mercury, but cannot supplant it entirely. In the late stages the value of idodine is not to be depreciated.

The early diagnosis of syphilis is of the first importance. If the primary lesion will not yield spirochetes, it may be possible to demonstrate the spirochete by puncturing a lymph gland. A favorable prognosis may be made where treatment is started within three or four weeks after infection begins, in which case a single maximum unmixed salvarsan course of treatment or a combined salvarsan mercury or salvarsan bismuth course often suffices, or, if one would play safe, two such courses, to effect a quick and lasting cure. This may be assumed if a serum negative reaction before the beginning of the treatment does not change to positive during an observation of two years. The chances of a cure may be regarded as favorable, however, even in the seropositive primary stage and during the first few weeks of the secondary stage. But in such cases two, or better still, three courses of a combination course must be employed if a certain cure is to be effected.

The separate doses of salvarsan must not be too small or given at too great intervals apart. The first injection should consist of 0.15 or 0.3 gm. of neosalvarsan to determine the presence of an idiosyncrasy. If none is present, on the following day men are given 0.6 gm., women 0.45 gm. of neosalvarsan. These doses are again administered every fifth or fourth day until a total of five or six grams of neosalvarsan has been given. In addition the patients are given ten to fourteen injections of bismuth or a corresponding number of mercury injections. Or the mercury may be used by inunction. After an interval of four to six weeks, a second course of the same treatment is repeated, and two or three months later, a third course is given.

Such a course of intensive treatment will usually effect a cure, but there are cases where paralysis or tabes occurs in later years in spite of the treatment. In these cases the malaria treatment of general paralysis works very well. Recently the malaria treatment, preceded and followed by an intensive course of salvarsan, has been found to exert a favorable influence also upon the early stages of syphilis. The action of the malarial fever should be interpreted simply as a nonspecific elevation of the powers or as irritation therapy. The combination of ultraviolet light with chemotherapy may be explained as a similar effect. The favorable influence on syphilitic disease processes of nonspecific therapy is proved incontestably by the action of phlogetan, a mixture of disintegration products from certain albuminous substances.

The treatment of a syphilitic patient should not be stopped before a lumbar puncture is done. A syphilitic should be pronounced as probably cured only when after several years of a seronegative blood finding the cerebrospinal fluid also shows normal conditions. If the cerebrospinal fluid shows normal conditions the treatment may be discontinued after from three to five specific courses even though the serum reaction of the blood remains positive. Iodine serves very well in such cases. At certain intervals röntgenology should be employed in order to detect disease changes in the large bloodvessels at the beginning of their development so as to apply the appropriate treatment.

Continued Instead of Intermittent Treatment of Syphilis.—Johan Almquist (*Urologic and Cutaneous Review*, May, 1926) presents the results of continuous antisyphilitic treatment, using varied specifics arranged in alternating courses without any interruptions. Treatment is begun with salvarsan, beginning with 0.3 or 0.45 gm. every fifth day and gradually increasing this dosage up to 0.9 gm. during the course of six weeks until ten doses have been given. Immediately following this, a course of bismuth, or a similar course of absorbable mercury (usually mercury salicylate) is given every three days for ten doses during a period of one month. Bismuth and mercury may be given, one following the other during a period of two months, without intermission. The course of salvarsan is then again repeated and in turn another course of bismuth and mercury is given without intermission. In this manner it is possible to continue for a longer or shorter time. If there is no idiosyncrasy for mercury some insoluble form of mercury as blue ointment is given to get a prolonged action. If the patient shows little tolerance, potassium iodid, at least three gm. daily, is given for one to two months.

During the course of salvarsan treatment a Wassermann reaction is taken prior to every second or third injection. During the course of the bismuth and mercury injections a test at the beginning, in the middle and at the close of treatment, is sufficient. The period of treatment without interruption never exceeded fourteen months.

If proper precautions are taken to rid patients of gingival fissures or diseased tonsils or other pockets in the mucosa of the mouth, by removing the sources of infection and proper oral hygiene, stomatitis may be avoided, even though huge doses of mercury are administered. Colitis may also be prevented. To avoid symptoms of toxemia during continuous treatment, it is very necessary to pay special attention to the individual tolerance, and to modify the dose accordingly, especially with mercury. As mercury frequently induces a loss of weight, the body weight should be carefully and frequently controlled. Salvarsan produces an increase in body weight, especially with smaller doses. Bismuth has a somewhat similar effect upon the weight.

Inordinate Syphilis.—A. Galliot (*Urologic and Cutaneous Review*, May, 1926) recalls that syphilis is classically described as having a regular evolution: primary, secondary and tertiary periods and the period of visceral and nervous syphilis. Most of the cases correspond to that theoretical evolution, but sometimes syphilis occurs with a series of anomalous forms and great variations in the chronology of the lesions. These cases of inordinate syphilis are due, perhaps, to a peculiar virulence of the microbe, or maybe to special conditions of the host.

The chancre usually appears within twenty to forty-five days, but cases have been reported in which the chancre appeared sixty and even ninety-five days after exposure as a result of inadequate treatment. The same may be said of the secondary period. On the other hand, another form of syphilis exists which seems to run along at full speed. This is the form of malignant and precocious syphilis, in which the hypervirulence of infection goes full speed, the secondary manifestations invading the whole organism and rapidly ending in the tertiary form.

Other forms still exist where the evolution of syphilis is

quite anomalous, but these irregular evolutions can only be appreciated after a period of several years. Under this category we may place syphilis with malignant evolutions, called implacable syphilis, and others with benign evolution are called cryptosyphilis, or latent syphilis. Of the latter type the only symptom is the unchangeableness of the Wassermann reaction which remains always positive, in all cases, in spite of all kinds of treatment, even the most intensive. Implacable syphilis is found in two kinds of cases: 1, recent syphilis regularly and correctly treated from the primary or secondary period, or 2, the case may present itself as an old syphilis treated at the beginning more or less regularly and having remained latent for a long time a Wassermann reaction, generally made by chance, is positive and remains so in spite of treatment. It takes as in the preceding type, a previous or visceral form absolutely incurable.

There exists also another form of syphilis which, instead of being virulent, is benign. This form, which seems to be stopped in its evolution, is chiefly observed by making inquiries among old people who own to having had syphilis in their youth. The disease, at the beginning, was carelessly or not treated at all, and all during their lives—sometimes long—the patients have never had any specific manifestations, or from time to time have had very slight cutaneous lesions, promptly cured by mild treatment. In some peculiar cases the syphilis seems to be stopped in its evolution. Those are cryptosyphilis often discovered among pregnant women. The syphilis is highly toxic to the child, but very benign to the mother who perhaps, not having been treated during all her life, never shows the least manifestation of the disease, except for the numerous troubles in gestation. The women appear to be the socalled germ carriers.

It is very difficult to know what agency is responsible for those anomalies. Two hypotheses can be offered: Organism or medium, probably the latter.

Syphilitic Bronchopathies of the Second Period.—Jean Tissot (*Urologic and Cutaneous Review,* May, 1926) remarks that syphilitic bronchopathies of the second period are considered to be rare because not sufficient care is taken to detect them. He has been able to demonstrate that in every eighteen syphilitics having secondary lesions, twelve presented symptoms of subacute bronchitis, with coarse bronchial rales at the level of the hilum and hissing and sibilance at the apices without fever or expectoration, and this without the patients suspecting the presence of any affection of the respiratory passages.

On simple inspection one is often struck by the bad general condition of the patient who is emaciated and asthenic. There are the lesions of ordinary bronchitis, but a strikingly pronounced dyspnea. The expectoration is abundant, more mucous and foamy than purulent. In the morning upon awakening the expectoration is often bloody and during the day there is slight hemoptysis. Tuberculosis may be suspected, but no tubercle bacilli are demonstrable. Radioscopy shows a fanlike opacity proceeding from the hilum, the course of the bronchi marked and often grayish at the apex. Radiography confirms these pictures.

The author explains the hemoptysis by venous congestion and vasculoconjunctival hyperemia noticed in the course of the visceral localization of secondary syphilis.

These pulmonary complications improve rapidly under the influence of novarsenobenzol treatment, the arsenic at the same time improving the general condition. Iodids are interdicted in this condition. Morphine may be used for the dyspnea. The hemoptysis usually disappears with the antisyphilitic treatment.

Pregnancies as a Factor in the Prevention of Neurosyphilis.—H. C. Solomon (*American Journal of Syphilis,* January, 1926) studied the history of pregnancy in 559 syphilitic women thirty years of age or older, admitted to the Boston Psychopathic Hospital. These 559 cases were divided according to the diagnosis of paretic neurosyphilis, tabetic neurosyphilis, meningovascular neurosyphilis, and syphilis without central nervous system involvement. The results of the analysis showed that about forty-four per cent. of the women with paretic and tabetic neurosyphilis were nulliparæ in comparison with 26.5 per cent. of nulliparæ among the women who had syphilis but no evidence of nervous system involvement; also that pregnancies were considerably more frequent among the non-nervous system luetic patients than among the neurosyphilitics.

One of two conclusions may be drawn from these analyses. First, that women who develop neurosyphilis become less fertile than women infected with syphilis but without central nervous involvement, either because the former have a more serious type of infection or because they are infected with a different type of organism, namely, a neurotropic strain which tends to affect the childbearing potentialities of the individual; or, second, that women who become pregnant receive thereby a protection against the spirochete and its attack upon the nervous system.

The first hypothesis has been mentioned in the literature often enough. The second alternative is very suggestive and what value it has is opposed to the explanation of neurosyphilis wholly on the basis of a neurotropic strain of spirochetes. One may paraphrase the idea to read in more general terms, as follows: Changes in the metabolism of a syphilitic patient may affect his ability to protect the nervous system from the attacks of the spirochete. Pregnancy, with its metabolic concomitances may be an example.

Syphilitic Myocarditis in the Rabbit.—Wade H. Brown and Louise Pearce (*Journal of Experimental Medicine,* April, 1926) found in the course of routine postmortem examination of rabbits infected with Treponema pallidum six cases of pronounced granulomatous myocarditis. Treponemata were not discovered in the lesions, but the clinical history, and the gross and microscopic appearance of the lesions seemed to warrant a diagnosis of syphilitic myocarditis. The lesions measured one or more centimetres in diameter, and histologically were practically identical with those described by Warthin in cases of syphilitic myocarditis in man. These are the first cases of syphilitic myocarditis or of visceral syphilis in the rabbit that have been reported.

Gummatous Osteoperiostitis of the Skull in Congenital Syphilis.—Ethel C. Dunham (*American Journal of Diseases of Children,* November, 1925) reports the occurrence of gumma of the skull in two children. The bones and skin were involved without evidence of involvement of the brain or meninges. The lesions healed rapidly under general antisyphilitic treatment. In spite of the formation of sequestrums, surgical treatment was not necessary to bring about complete healing, as evidenced locally and in the röntgen ray. Healing of the bones took place more slowly than healing of skin lesions, but was finally complete. While gummas of the skull occurred in the cases reported as a manifestation of late congenital syphilis, they may occur early, as in the case reported by Ambrus.

Conjugal Syphilis of the Nervous System.—Alfred Gordon (*American Journal of Syphilis,* April, 1926) states that in an attempt to sum up the entire subject of conjugal syphilis of the nervous system, several etiological element should be taken into consideration. First, the clinical and experimental evidences favor the conception of a special neurotropic virus different in its character from the demotropic virus. Second, a special innate predisposition for organic alteration of the central nervous system. Third, the intensity of the use or overfatigue of the cerebral centres of the spinal axis. Fourth, conjugal neurosyphilis includes not only the parenchymatous forms (tabes, paresis) but also the vascular or meningeal type in which the nervous disturbances appear secondarily (Argyll Robertson pupil, abolition of Achilles tendon reflexes, lymphocytosis or other abnormalities of the cerebrospinal fluid).

Diffuse Syphilitic Infiltration of the Stomach.—I. Eisenklam (*Wiener klinische Wochenschrift,* February 11, 1926) states that the clinical picture of syphilitic disease and ulceration of the stomach corresponds to that of simple ulcer and of cancer. Pains at the xiphoid process, in addition to backache, intolerance of the stomach, vomiting, possible gastric hemorrhages of varying intensity, and emaciation, are all present both in specific as well as in the common affections of the stomach. The chief symptoms, namely, anacidity of hypoacidity, achylia and cachexia, show nothing characteristic. The hyperplastic thickening of the stomach produces clinical pictures, which depend largely upon the localization of the greatest amount of the changes in the gastric wall.

There is no site of predilection for syphilis in the stomach. It usually takes the form of diffuse changes which infiltrate the gastric submucosa. Inasmuch as the pyloric portion of

the stomach produces the most prominent symptoms in the clinical picture, this form of syphilis of the stomach is usually considered as a hypertrophic stenosis of the pylorus, even though the stenosis constitutes only a symptom. These are the cases which, aside from the true gummatous tumors, pass under the clinical and roentgenologic diagnosis of stenosis of the pylorus and are referred to the surgeon as neoplasm at the pylorus.

The diagnosis of syphilitic disease of the stomach is relatively easy when other luetic symptoms are clinically demonstrable, but this is usually not the case. Syphilis of the stomach may or may not be associated with syphilis of the liver and intestines. A negative Wassermann reaction does not rule out syphilis. The therapeutic test with iodides or arsphenamin may be of value. Röntgenography is not of much diagnostic value and may even be misleading, often suggesting the diagnosis of carcinoma. If only the diagnosis is though of, the diagnosis will be made more often.

The prognosis in regard to life seems to be one of doubt. The majority of the known cases have been diagnosed at necropsy, and consequently it is impossible to determine whether the patients died from the syphilis of the stomach or whether the latter was only a part of the fatal cause. In some cases the disease is beyond control.

Treatment of Syphilis of the Central Nervous System.—Frederic J. Farnell (*American Journal of Syphilis,* April, 1926) describes his method of treatment in the following types of cases of syphilis of the central nervous system: early cases of tabes dorsalis in which response to ten to twenty intravenous injections was poor; special cases of early syphilis of the cord, where difficulty in urination was the initial disorder; fairly advanced cases of combined sclerosis due to syphilis with poor bladder control; early cases of multiple sclerosis with bladder symptoms; cases of the exudative form of meningoencephalitis with a tabetic symptom complex.

The author's technic is the following: From twenty to fifty c. c. of the salvarsanized serum are prepared in the usual manner. The Swift-Ellis method is employed. The needle is introduced into the first, second, or third lumbar space to such a distance that it is considered outside of the dural sac. The syringe is then attached to the needle, and by slow but firm pressure the fluid is introduced into the extradural space, taking from three to seven minutes to avoid unpleasant symptoms. The needle is then withdrawn, and the technic followed as in the usual run of spinal puncture cases. When it is definitely decided that the pain is secondary to an intervertebral neuritis, rather than a radiculitis (a subarachnoidal position), twenty to fifty c. c. of isotonic salt solution is instilled into the epidural space. Many such cases of tabetic pain have been relieved by hypertonic iodides intravenously. A ten per cent. solution is made, using one hundred c. c. of distilled water, which is autoclaved. The intravenous route avoids irritation of the digestive tract. For those patients who do not respond to salvarsan intravenously and iodides by mouth, the author recommends a series of intravenous hypertonic solutions of sodium iodide at intervals of five days. Tryparsamide is used as an associative method of treatment.

Syphilitic Chancres Retarded Spontaneously or by Antisyphilitic Treatment.—Henri Gougerot (*Urologic and* Cutaneous Review, May, 1926) states that one encounters retarded chancres under two different series of conditions: In the first series the incubation is prolonged without apparent cause, and in the second series the incubation is retarded by an antisyphilitic treatment of a curative sort administered in all old syphilis either acquired or hereditary. The incubation may be also retarded by a prophylactic antisyphilitic treatment.

In regard to the first series one should bear in mind these abnormally long incubations even in the absence of treatment, and to observe for a long time persons suspected of being infected. Clinical and serological examinations should be made repeatedly for twelve months. The diagnosis of syphilis cannot be rejected because the incubation period exceeds one hundred days. These cases prove that there exists much attenuated syphilis, not betraying itself by any sign in the beginning, but later, on account of lack of treatment, continuing to develop and is transmitted conjugally or to descendants and cause grave visceral lesions in the patient himself, such as neuroses.

In the second type the typical infection is simply retarded. There is a chancre of usual aspect and intensity with adenitis. The Wassermann reaction appears more or less quickly. More often, apparently, the retarded syphilis is attenuated. The chancre may be small but last only a few days. There may even be no adenitis. The chancre may even be absent, without any visible lesion or palpable glands, but the seroreaction made in a series becomes positive. It is syphilis without chancre or bubo. In some the syphilis reveals itself first in secondary symptoms. One should then mistrust the clinical and serologic success which is almost constant with prophylactic treatment. The Wassermann reaction may be negative in spite of the existence of syphilis.

Sometimes the arsenical treatment is insufficient although surpassing the doses at first recommended. Sometimes the treatment is too tardy. Then there are the cases of arsenoresistant syphilitic virus.

The following rules of treatment should, therefore, be followed: 1. It requires an intense arsenical treatment with large doses up to 0.9 gm. of neosalvarsan or of sulpharsenol at short intervals of three to seven days, with a total dose of six to seven gm. if possible, with pauses as brief as possible (three or four weeks), with a second strong arsenical course and then a bismuth and mercury course of six months.

2. One should from the start combine as soon as possible bismuth with arsenic to avoid arseno resistance.

3. There is required a prolonged clinical and serologic oversight of all who have received prophylactic treatment for two to four years from the date of commencement of treatment, just as long as if the chancre had appeared.

4. One should practice reactivation before being assured of the abortion of syphilis, and not be content with a negative Wassermann reaction even in a series.

Spirocide (Stovarsol) in Syphilis.—M. Oppenheim (*Wiener klinische Wochenschrift,* May 27, 1926) asserts that there is no antisyphilitic remedy that may be given by mouth that can equal or even approach the value of stovarsol; in the rapidity of its action it is comparable only with salvarsan. Under proper administration it is noninjurious to both the gastrointestinal canal and the entire organism. It is usually associated with an increase in weight. After the first administration there is usually a high fever and occasionally a toxic erythema which never goes into a dermatitis. Usually it is followed by a Herxheimer reaction. All of the cases of seronegative primary syphilis treated with stovarsol and bismuth preparations for abortive purposes remained negative after one and a half years both in regard to the general symptoms and seroreaction. Secondary syphilis treated with spirocide alone soon become asymptomatic and show little tendency to recurrences; combined treatment gives the same results as neosalvarsan. Tertiary syphilis and congenital syphilis of infancy is influenced very favorably and rapidly. Infants bear this drug excellently. The seroreactions become negative less rapidly than with salvarsan treatment, but after four to six months of spirocide treatment they behave exactly like the cases treated with salvarsan. Lumbar punctates behave like cases after combined neosalvarsan treatment.

Spirocide has failed in skin diseases: chronic pemphigus vulgaris, acute and chronic psoriasis vulgaris, lichen ruber planus, erythrodermias, chronic eczemas and neurodermatides showed no marked improvement—a behavior similar to that of salvarsan.

The author believes that spirocide deserves a place in the therapy of syphilis. It cannot replace salvarsan, but it is an excellent substitute in cases where salvarsan cannot or must not be given. The most effective dosage has not yet been determined. Oppenheim follows that proposed by Levaditi: upon three successive days the patient is given eight or nine tablets a day on an empty stomach, with a three days' rest. As a rule, one tablet is given for each kilogram of weight. It will probably assume a place of first importance in infantile syphilis, provided the initial dose is small enough. In aphthous stomatitis of small children a local application (one tablet to ten c. c. of water or glycerin) has given very good results; also in specific leucoplakia with erosions and ulcerations. In syphilis of the internal organs it often produces focal reactions (pain) and general reactions (fever), which facts may be of diagnostic significance. It is also borne well in syphilitic aortitis. In every case where a syphilitic infection is suspected, spirocide may be given as a prophylactic, and the subsequent treatment should be continued for at least one year. In the syphilis of infants it is a specific of the first importance.

PEDIATRICS

Nonendemic Enlargement of the Thyroid Gland in Children.—Apart from endemic goitre and other hyperthyroid conditions, H. Finkelstein recognizes (*Jahreskurse für Arzliche Fortbildung,* June, 1925, vol. 3, page 1, as quoted in *The Endocrine Survey,* April, 1926, vol. 3, page 130) a form of simple enlargement not uncommon in the period of most rapid growth. As in most thyroid disturbances, girls are more subject than boys. In Germany tryroid enlargement is more common among grammar school children of the middle classes than among the poorer children who attend municipal schools. In about half the cases the entire thyroid is affected by the hyperplasia: next in frequency is the isthmus or the right lobe alone, while isolated involvement of the medial or the left lobe is exceptional. Normally from the fifth year of life the growth of the gland is accelerated, and at puberty it weighs three times as much as in infancy. It is noticed that children and adolescents with enlarged thyroid glands reach a greater height as a rule than normal individuals. Finkelstein believes abnormal predisposition to growth is the primary factor and the hyperplasia a sequel. Since girls grow more rapidly between the ages of ten and fourteen than do boys, this may account for the larger incidence of thyroid hypertrophy in girls. Secondary sex characteristics are known to be accelerated in girls with enlarged thyroid glands, and both conditions probably depend on changes in the sexual organs. These patients tolerate iodine very well. Ovarian substance has been employed with benefit, although in exophthalmic goitre it may cause tachycardia. Quinine and arsenic prove useful in children with severe cardiovascular excitement, and phosphorus also exerts a sedative influence and causes increase in weight.

Cretinism.—A follow-up report of eight cases of cretinism is given by Charles Gilmore Kerley, *(Archives of Pediatrics,* February, 1926). In a boy of fourteen years and a girl of ten the dose of desiccated thyroid has been gradually diminished and Dr. Kerley thinks it reasonable to assume that in these two children the thyroid function will be completely established. In the other six, who also represent thyroid dysfunction, the dose has been increased from fifty to seventy-five per cent. Indications for increasing the dose have been irritability, sleeplessness, bedwetting, a tendency to nasal hemorrhage. Each case regulates its own dose. When an insufficient amount of thyroid is given, or when it is discontinued, the child becomes physically inactive and mentally dull. It is evident that the thyroid secretion is utilized as rapidly as it is produced as the change when the thyroid medication is discontinued is noticeable in twenty-four hours. It would seem that the ultimate results of thyroid feeding in cases of complete absence of the thyroid gland are not as favorable as the early improvement would seem to warrant. In those who have reached adolescence, the mental capacity is decidely defective as shown by the records in these cases.

The Picture of Whooping Cough.—E. Ziegler (*Schweizerische medizinische Wochenschrift,* January 30, 1926) found that in the beginning of whooping cough the appearance of an increase in the total number of leucocytes with a simultaneous increase of the absolute and very often also of the relative number of lymphocytes is typical. These changes have their beginning in the catarrhal stage and usually reach their maximum during the first few days of the convulsive stage. Generally in the course of five to six weeks later there follows a gradual recession to normal figures. The lymphocytosis in whooping cough is brought about by infectious-toxic causes. The mechanical factor, the expression of the lymphocytes by the attacks, plays only a subordinate part. It is very unlikely that a postinfectious lymphocytosis occurs.

The blood findings are important, in the first place, in the early stage, in which it was found to be positive in about seventy to eighty per cent. of cases on continuous examination, and secondly, in the beginning of the convulsive stage, when after a single examination no convulsive attack may have as yet occurred, and particularly in the differential diagnosis from the pseudopertussis of grippe and in attacks of bronchial gland tuberculosis. The blood findings are often of no value diagnostically in very slight and abortive cases and mostly in the declining stage.

The prognostic significance lies in the fact that the disappearance of the lymphocytosis indicates well the transition from the infectious-toxic stage to the psychogenic-neurotic stage. The severity of the individual case cannot be judged always by the grade of the lymphocytosis.

With the development of pulmonary complications there is a relative and absolute increase of the neutrophiles with a displacement of the same to the left without any diminution of the lymphocytes. In the case of a combination with other infections there develop more or less typical "interfering blood pictures."

Hookworm Infestation.—An excellent plan for control measures in regard to hookworm disease is suggested by W. G. Smillie, M. D., and D. L. Augustine, Sc.D. (*American Journal of Diseases of Children,* February, 1926) at the end of a valuable study of intensity of infestation in 1,821 children, 1,280 being white and 541 negro. Heavy hookworm infestation (500 Necator americanus or over) is found to cause marked retardation in the normal growth in height and weight and lowers the hemoglobin of children of school age. An intensity of 100 to 500 hookworms also produces measurable injury and is true hookworm disease. Light infestation (from 1 to 100 Necator americanus) produces no measurable retardation in the normal development of children of school age, nor is the hemoglobin of this group reduced to any degree. An infestation of 25 worms or less represents a carrier state, is not true hookworm disease and should not receive hookworm treatment. Other interesting points came to light upon comparing the charts of the white and the negro children. The latter had a markedly lower vital capacity as measured by the Sanborn wet spirometer, but both normal and infected negro children had a slightly higher hemoglobin than white children.

Hemorrhagic Measles with Encephalitis.—Harry Lowenburg and Abraham Lincoln Schaller (*Archives of Pediatrics,* Vol. 43, February, 1926.) were unable to find in the literature any reference to the use of convalescent serum as a therapeutic agent in the treatment either of measles or of any of its complications. They present a case in a little girl four and one half years old. The following conclusions convey only a slight idea of the great efforts made to save the child: A. When encephalitis which is more common in the hemorrhagic type of measles is suspected, lumbar puncture should be performed. B. The efficacy of convalescent measles serum, injected intraspinously, intravenously and intramuscularly in encephalitis complicating measles has not been proved but is worthy of further trial; it produces no reaction of anaphylaxis and is entirely harmless; is should be used early—as soon as symptoms, proved by lumbar puncture, indicate involvement of the brain and its membranes; large amounts are necessary. C. Encephalitis occurring in measles may proceed to full recovery.

The Basal Metabolism After Pneumonia.—Bela Schick, Philip Cohen and Isabelle Beck (*American Journal of Diseases of Children,* Vol. 31, February, 1926) found from data secured from twenty-one children over five years of age that after pneumonia, there is not infrequently a low basal metabolism which rises to normal in from one to three weeks, occasionally longer, which is associated with a slow pulse rate. Less frequently a high postinfectious basal metabolism was encountered which declined to normal in from two to three weeks. These two findings may be related, the authors feel, to a marked tendency to obesity or leanness, or a stunting of the growth processes, occuring after infections.

Index of Refraction of Breast Milk Serum.—It is always necessary to protect against fraud. Now that "breast milk dairying" is assuming considerable proportions, lest the product be diluted with water or cow's milk by the unscrupulous, Charles I. Solomon and Alfred T. Shohl (*American Journal of Diseases of Children,* February, 1926) propose a means of detection by determination of the index of refraction. By this method, the addition to breast milk of eleven per cent. of water and twenty per cent., or more, of cows' milk may be simply, rapidly and accurately detected.

Trypsin Secretion of Infants.—There seems to be a possibility of a pathogenic relationship between the increased trypsin secretion and some symptoms of rickets, according to T. Lukacs (*American Journal of Diseases of Children,* February, 1926).

Influence of Acidified Milk on Duodenal Function in Infants.—Lloyd Arnold (*American Journal of Diseases of Children,* May, 1926) presents a brief paper on the influence of acidified milk on duodenal function in infants.

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Gregory Stragnell, M. D., *Editor*

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Medicolegal Notes.

TAXATION OF NURSES' HOME ATTACHED TO HOSPITAL

The Mississippi Supreme Court holds, Johnson v. Mississippi Baptist Hospital, 106 So. 1, that where a hospital maintains a home for nurses employed in its services, where they live when not on duty, which nurses' home is situated on a separate lot or lots from that on which the hospital building is situated, and is not used exclusively for the purposes of the hospital within the meaning of Mississippi Code 1906, § 4251 (d), the property is subject to taxation, notwithstanding that the hospital gives a course of instruction to the nurses employed by it in the proper nursing and treatment of patients.

SUFFICIENT INDICTMENT UNDER ALABAMA MEDICAL PRACTICE ACT

The Alabama Court of Appeals, Robinson v. State, 106 So. 53, holds that the Alabama medical statute is designed to prevent the treatment of diseases of human beings by any system whatsoever, unless the party so engaged has first obtained a certificate of qualification from the state board of medical examiners, and therefore an indictment charging that defendant treated or offered to treat human diseases "by a system known as chiropractic for a reward, such system being practised by men known as chiropractors, without first having obtained a certificate of qualification from the state board of medical examiners" was not demurrable for failure to sufficiently describe the system or its method of practice, or failure to aver that that is unknown.

In Robinson v. State, 106 So. 203, the same court holds that all that is necessary to charge violation of the Alabama statute, Code 1907, § 7564, as amended by Acts, 1915, p 661, is an averment that defendant treated human diseases without having obtained the required certificate, and an averment that it is done by a system known as chiropractic is not necessary. Such an averment, though subject to proper demurrer, it is held, does not vitiate the indictment.

MALPRACTICE MUST BE PROVED—CAUSES OF ACTION AGAINST TWO PHYSICIANS ACTING SEPARATELY HELD IMPROPERLY JOINED

The Alabama Court of Appeals holds, Wilder v. Shannon, 106, So. 69, that in a malpractice action the plaintiff has the burden of proof of, 1, negligence and 2, that the injuries suffered were the proximate results thereof. This burden was not discharged where the overwhelming weight of the evidence was to the effect that whatever injuries the plaintiff may have suffered "were the direct result of the unprecedented flu epidemic that swept over the country at the time of the death of her testate," on October 5, 1918.

The action was in tort against two physicians jointly. There was no evidence showing or tending to show any community of design or interest existing between them. Any wrongs committed by either of them were apparently entirely separate and distinct from any committed by the other, and no reason appeared for joining them as defendants. Judgment for plaintiff was reversed and a new trial ordered.

ANSWER HELD RESPONSIVE TO HYPOTHETICAL QUESTION AS TO EFFECT OF CONCENTRATED LYE

In an action for injuries sustained by plaintiff while using concentrated lye in washing windows for defendant, two physicians testified as experts, and in a hypothetical question submitted they were asked to assume that concentrated lye and hot water were used, and, on this assumption, were asked if this could have caused the plaintiff's injury. In answering the question they stated that a strong solution of lye would be required to inflict such an injury as plaintiff sustained. The objection was made that the answer was not responsive to the question. The Arkansas Supreme Court held, Wilson & Co. v. Smith, 278 S. W. 31, that the answer was responsive to the question, which implied that the lye possessed burning qualities and did not exclude the idea that a strong solution had been used.

SCHOOL BOARD COMMITTEE MEMBER HELD INELIGIBLE FOR POSITION OF SCHOOL PHYSICIAN

The Supreme Judicial Court of Massachusetts holds, Barrett v. City of Medford, 150 N. E. 159, that a member of a school committee is ineligible to appoint as school physician or medical inspector, the duties of the two offices being incompatible. The court says: "Having in mind that a member of either branch of a city council or of a municipal board of a city is not permitted to be personally interested directly or indirectly in a contract made by the city council, or other branch thereof, or by such board, or by authority derived therefrom, in which the city is an interested party, Mass. Gen. Laws, c. 268, Sec. 9; that no "member of the city council shall, during the term for which he was chosen . . . be eligible to any office the salary of which is payable by the city," Gen. Laws, c. 39, Sec. 8; that a board of health of a city, who are authorized to appoint a quarantine physician under an ordinance giving him a compensation fixed by the city council, may not appoint one of their own members such quarantine physician, Gaw v. Ashley, 195 Mass., 173; that no member of a school committee shall be eligible to serve as teacher or superintendent in the public schools, St. 1904, c. 173; we think a school committee, in the absence of a statute permitting it, cannot elect one of themselves to the salaried office of school physician. The duties he is to perform as physician are incompatible with the supervisory duties which as a member of the committee he should exercise over the incumbent of the office of school physician. Consistently he cannot be master and servant."

The court also pointed out that the superintendent of schools might hold his office by a deciding vote of the member whom he may subsequently nominate for school physician, with an accompanying recommendation of a stated salary for the incumbent of that office.

LAYMEN'S TESTIMONY AS TO EXISTENCE OF DISEASES HELD INADMISSIBLE

In an action on an insurance policy the Kentucky Court of Appeals held, Sovereign Camp W. O. W. v. Morris, 278 S. W. 554, that testimony of lay witnesses that the insured had never had any disease of the heart or certain other diseases stated in the application was incompetent and prejudicial.

If within his knowledge, the court said, a layman may testify as to the strength, vigor, and apparent physical condition of another person, and as to the presence or absence in such person of symptoms indicating disease; also, some forms of disease are so common and so well understood as to be within the knowledge of a layman; but he cannot diagnose diseases, or testify as an expert in reference thereto. To illustrate: The witnesses in this case were not qualified to testify that the applicant did not have heart trouble or stomach trouble, but evidence of nature and symptoms of these diseases could have been proved by a physician, and these witnesses then could have testified as to the presence or absence of such symptoms.

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The Use of Vaccines and Sera in Communicable Diseases*

RALPH OAKLEY CLOCK, M.D., F.A.C.P.

Pearl River, New York

The use of vaccines and sera in the prevention and treatment of disease dates from the introduction of diphtheria antitoxin by Behring in 1893, and from the application of antityphoid vaccination by Wright in 1896. The success of both of these remedies has firmly established them as invaluable agents in the therapeutic armamentarium, and has served to point the way to the development of similar products for the prevention and treatment of other diseases.

In the development of vaccines and sera, scientific investigation and experimentation have necessarily preceded clinical trials of those products which have proved to be of permanent value. Laboratory research and clinical observation should go hand in hand, each acting as a control on the other; for not only is it unscientific but it is an imposition on the profession to submit a vaccine or serum for clinical trial without successful preliminary laboratory investigation of its probable value.

The great practical value of sera lies in their therapeutic or curative properties; but in the case of vaccines, their main field of usefulness is protective. In considering the practical application of these products, the various diseases will be discussed in alphabetical order.

DIPHTHERIA

The prevention and treatment of diphtheria was discussed so freely at the 1925 Institute that I shall mention this disease only to urge the universal application of toxin-antitoxin for immunizing all children of preschool and school ages; and to recommend, to those of you who are called upon to treat diphtheria, that you adopt the policy of administering antitoxin early and in one dose of sufficient amount to control the entire course of the disease.

EPIDEMIC MENINGITIS

Epidemic meningitis or cerebrospinal fever has occurred in sporadic or epidemic form almost continuously since the world-wide epidemic of 1904. Prior to the use of serum, the mortality recorded in this country was about eighty per cent. Since the introduction of antimeningococcic serum in 1906, the gross mortality has been reduced to about thirty per cent.

To secure the best results from serum treatment, the following principles should be observed: 1. The serum should be injected as early as possible. 2. Serum should be injected by gravity into the spinal canal between the third and fourth lumbar vertebræ, or into the lateral ventricles through the open fontanelle so that it will come directly in contact with the meningococci. 3. The serum must be constantly present in as great concentration as possible, and, for this reason, should be injected at frequent intervals and in as large amounts as are safe. 4. Serum treatment should be discontinued only after the disappearance of the bacteria, and after improvement in the general condition of the patient.

In a suspected case of epidemic meningitis, lumbar puncture should be performed; and, if cloudy fluid is obtained, it is presumptive evidence of meningococcic infection and the serum should be administered without waiting for a bacteriological report. If the infection proves to be due to some other species of bacteria, no harm would have been done.

Dose.—In cases of average severity seen within the first three days, the serum should be given daily for three or four doses; or if of greater severity, at intervals of twelve hours for three or four doses then daily thereafter. The proper method of giving antimeningococcic serum is by the gravity method of intraspinal injection, following lumbar puncture and withdrawal of cerebrospinal fluid. The amount of serum introduced should be less by from five to ten c. c. than the volume of cerebrospinal fluid withdrawn by lumbar puncture. In infants and children, the dose of serum varies from five to twenty c.c.; for adults, from thirty to sixty c.c. Symptoms of shock during the intraspinal injection of serum are best treated by raising the patient's head and immediately removing fluid from the spinal canal. In addition to the intraspinal treatment, an intravenous dose of fifty to one hundred c.c. given at the outset of the disease and repeated once or twice during the acute stage may possibly prevent complications due to the entrance of meningococci into the blood stream.

MEASLES

Measles is universal, so that many people consider it a trivial disease; but as a cause of death in

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children, it ranks second among the acute contagious diseases. Therefore, some method of protection against measles is needed, especially for children under five years of age; because, if the disease could be prevented until later in childhood the mortality would be considerably reduced.

Recent discoveries.—At the present time a number of bacteriologists are making an intense effort to solve the problem of the etiology of measles. Recently, Ferry (1) isolated a streptococcus which he believes is the specific cause of this disease. From this organism he prepared a soluble toxin for use as a skin test and as an immunizing agent and, by immunizing animals with this toxin, he prepared an antitoxin. Culturally, this microorganism appears to be the same as that first described in 1917 by Tunnicliff (2) but the organisms do not give the same serological reactions. Within the course of a few months, the probable discoveries of Tunnicliff and Ferry should be developed to a point which, if they prove to be correct, will lead to the development of products which can be adapted to general distribution for the needs of the practicing physician.

Convalescent serum.—While waiting for confirmation of these discoveries and the development of a vaccine and antitoxin, we must depend upon serum from convalescent measles patients. This has been successfullly applied in several thousand cases, both in this country and abroad. The use of convalescent serum in a child that has been exposed to measles may prevent the development of the disease, or it may modify the severity of the attack, or it may fail entirely of any effect. The blood is usually drawn between the seventh and twenty-first day after defervescence of fever; but the efficiency of the serum is not markedly diminished if the blood is drawn three months after the occurrence of the disease, and storage in the icebox for six months does not appreciably alter its usefulness.

Dose.—For children under three years of age, 6 c.c. of convalescent serum is injected intramuscularly; while older children receive from six to ten c.c. This dose is sufficient, as a rule, to prevent the development of the disease in children who have been exposed for less than five days to measles. If it does not prevent the disease, it almost certainly modifies the attack so that it is very mild and not likely to lead to complications. The serum gives immunity for only two to four weeks, but in the modified cases there is lasting immunity.

The prompt use of convalescent serum will prevent serious outbreaks of measles in institutions, and thus prevent the development of complicating pneumonias.

PNEUMONIA

Prophylactic vaccination.—Although pneumonia is a prevalent disease, yet at present it does not justify a general and indiscriminate use of pneumococcus vaccine. There would seem to be two particular indications, however, for prophylactic vaccination against pneumonia: 1. For persons who are very susceptible to pneumonia and who suffer from repeated attacks of the disease. 2. For large groups of persons who are living together under abnormal conditions, such as recruits in time of war. In previous wars, intestinal infections were the chief menace to health. In the World War, pneumonia was the most serious of all infections and caused the greatest loss of life.

Pneumococcus vaccine could probably be used with benefit in the case of industrial workers, such as day laborers, truck drivers, chauffeurs, firemen, and policemen, who are constantly exposed to cold and wet; while the advisability of immunizing nurses, physicians, and relatives who come in contact with a pneumonia patient is a question which has not received much attention.

Injections of pneumococcus vaccine into monkeys produce an active immunity against experimental pneumonia and, when given in adequate doses, confers immunity against pneumococcus pneumonia in man. The evidence of such immunity rests on statistical studies and on the demonstration of immune bodies in the blood of those immunized with the vaccine.

Pneumococcus vaccine has been used with success among the mine workers of South Africa, and, during the World War, it was extensively used in some of the American army training camps as a prophylactic against lobar pneumonia. At Camp Upton, New York, Cecil (3) vaccinated 12,519 men against Types I, II and III pneumococcus. The men were observed for a period of ten weeks after vaccination and, during that time, no cases of pneumonia of the three types vaccinated against occurred among the men. In a control of approximately 20,000 men, there were twenty-six cases of Types I, II and III pneumonia during the same period. Numerous other statistical data could be cited to show the value of the vaccine.

Dose.—In civil life, vaccination against pneumonia is carried out with a vaccine consisting of equal parts of Types I, II and III pneumococcus. Three injections are given subcutaneously at intervals of one week, the first dose consisting of four and a half billion, the second and third doses each containing nine billion organisms.

Reactions.—Local and general reactions vary considerably in different persons, but the smaller the dose the less the reaction. Hence, if circumstances permit, it is desirable to divide the total dose into four or five injections.

Serum treatment.—The history of antipneumococcic serum affords a striking example of the difficulties and unforeseen pitfalls that may be encountered in the development of remedies of this class. Soon after the demonstration of the causal relation of the pneumococcus to lobar pneumonia, a serum was made by immunizing animals and such a serum was shown to protect other animals against pneumococcus infection. The serum was then used clinically and soon favorable reports appeared but others were doubtful or unfavorable. The serum was used for years until the weight of clinical opinion caused its abandonment as of no value in pneumonia.

Classification.—In 1910, it was discovered that the pneumococci are not a single species of bacteria but that there are actually several types or varieties in the United States, all of which were formerly classed together. At present what we call Types I, II and III pneumococci (4) are easily distinguished by laboratory tests, and all pneumococci not falling into these three types are classed together as Group IV. This group differs from the three type classes in not

being a single species but a heterogenous mixture of pneumococci.

The gain to therapeutics of this classification is due to the fact that a therapeutically active serum has been produced only against Type I pneumococcus infection, and this serum is not effective against infections caused by the other types of pneumococci. Therefore, in order to treat pneumonia rationally and scientifically with antipneumococcic serum, its application must be confined to cases of Type I pneumococcus pneumonia, proved such by laboratory tests; and only these cases may be treated with Type I antipneumococcic serum.

Dose.—In all cases of acute lobar pneumonia due to Type I pneumococcus, Type I serum is indicated and should be given as early in the disease as possible after the type of pneumococcus has been determined. The serum is best administered intravenously in an initial dose of not less than one hundred c.c., and this dose should be repeated every eight hours until the fall of temperature and subsidence of symptoms indicate that the infection has been overcome. In the average case, the total amount of serum required is 300 c.c. The serum should be warmed to body temperature and injected slowly.

Results.—The effectiveness of the serum is indicated, 1, by the blood of the patient being rendered sterile after injection of the serum; 2, by the arrest of the progress of the local lesion in the lung; 3, by subsidence of the subjective and objective symptoms of the disease; and 4, by the reduction in the mortality of the disease.

Mortality.—The mortality rate in cases of lobar pneumonia due to Type I pneumococcus not treated with serum has been shown to be from twenty-five to thirty per cent. or higher. The gross mortality rate in serum treated cases of pneumonia due to Type I pneumococcus is approximately ten per cent.

In about one third of all cases of lobar pneumonia, the Type I pneumococcus is the exciting factor; Type II is responsible for about one sixth of the total cases; and Type III is the pathogenic cause of another sixth of the cases. The remainder are caused by Group IV pneumococci. The great drawback, therefore, at present to the serum treatment of lobar pneumonia is that it is applicable only to Type I infections.

New researches.—For a number of years, efforts have been made to isolate the antibodies or immune substances from antipneumococcic sera and to produce a pure solution of potent antibodies free from the other elements of the horse serum. The researches of Felton (5), who is working under Rosenau at Harvard University, give promise of eventually placing the serum treatment of pneumonia on a more practical and efficient basis. He has succeeded in preparing refined and concentrated solutions of the antibodies contained in the various types of antipneumococcic sera, and his product is now being subjected to clinical trials in the hospitals of Boston, Chicago, New York and Pittsburgh. The results so far are fairly good, but the intravenous injection of antibody solutions from certain batches of serum produce moderate chills. Felton hopes in the near future to perfect a refined product which will have a high potency and which will produce no untoward results.

RABIES

Diagnosis.—Under the subject of rabies, let me emphasize the fact that it is a mistake to shoot or kill the suspected rabid animal. On the contrary, it should be confined and kept under observation for a period of one week. If the animal is in the incubation stage at the time of the biting, it will show symptoms of rabies and die within one week. Moreover, laboratory examination of the animal's brain fails in about three per cent to show definite lesions of rabies, and then animal inoculation tests must be made for a positive diagnosis and this requires from two to three weeks' time. Hence, if treatment is delayed for positive diagnosis, the disease may gain such headway that there will not be sufficient time for immunity to be established after the treatment is started. The safest procedure is to begin the antirabic treatment at once, without waiting for a positive diagnosis to be made from the animal.

Pasteur method.—The Pasteur treatment with some modifications has been in use since 1886 and has reduced the mortality in bitten persons from about sixteen per cent to less than one per cent. The Pasteur vaccine consists of living but attenuated virus: that is, the virulence of the virus is reduced by a slow drying process. However, some degree of paralysis has occasionally followed the antirabic treatment by the Pasteur method, and this has been attributed to true infection with the attenuated, living, rabies virus.

Semple method.—Sir David Semple (6) conducted extensive experiments in which killed, phenolized rabies virus was used to immunize rabbits, dogs, monkeys and human subjects. His researches proved that such a vaccine can be relied upon to produce a high degree of immunity and that it is a safe and an efficient rabies vaccine. Experiments (7) on animals have shown that the Semple method of vaccination against rabies gives much better protection than does the Pasteur method. During recent years, therefore the Semple method has largely superseded the older Pasteur method of treatment. Over a period of sixteen years, a total of 29,898 persons received the fourteen dose Semple treatment and the percentage of failures was only 0.7. Again, during a four year period, 2,009 Europeans were treated with the Semple vaccine at the Pasteur Institute of India and there were only 0.19 per cent of failures.

The fourteen dose Semple method of antirabic treatment consists of a 4 per cent. killed, phenolized, fixed rabies virus, and possesses distinct advantages over other methods:

1. Several investigators have shown that the spinal cord of rabbits inoculated with fixed rabies virus contains less virus than the brain, and that the virus in the cord is not so uniformly distributed as in the brain. The Semple vaccine is prepared from brain tissue and so should have greater immunizing power, gram for gram, than one prepared from spinal cords.

2. Since the virus in the brain tissue is more concentrated, also because the virus in the Semple method is killed virus and not live virus, it is possible to use relatively larger doses of the immunizing material and thus produce a protective immunity probably sooner with only fourteen doses than with the twenty-one or twenty-five doses used in other methods.

3. The entire treatment is available immediately in

a single package, for it can be stocked by the druggist; thus eliminating the necessity of waiting for subsequent doses to arrive, which often causes much anxiety to the patient.

4. Each dose is supplied diluted, ready to use.

5. Only one dose is required a day. Hence, the minimum inconvenience to the patient.

6. All doses are alike. The amount and strength of the virus is the same in each dose. This eliminates possible confusion concerning the order in which the doses should be given. Moreover, children are treated with the same dosage as adults.

7. The Semple vaccine consists of a killed virus, and such after effects as paralysis cannot occur from the vaccine.

8. Being a killed virus, it can be handled without fear on the part of either physician or patient.

It is now generally accepted, and the view is supported by experimental evidence, that the maximum degree of immunity is not developed until about two weeks after completion of antirabic treatment. The duration of immunity in man after a course of antirabic treatment is unknown, but it is generally advised that a person exposed to rabies more than six months after taking antirabic treatment should receive a new course of treatment.

SCARLET FEVER

During the past two years, there have been greater definite advances in our knowledge of the etiology and treatment of scarlet fever than in any of the other communicable diseases. Some of these advances are now sufficiently stabilized to permit of their being interpreted as important factors in the control of this disease.

How transmitted.—One important point that has been brought out in the more recent investigations is that the disease is not transmitted through the skin, for the scales during the desquamation stage do not carry the infection as was long supposed. The disease is transmitted only through air borne droplets of saliva or nasal discharges, or by contact with articles soiled with saliva, nasal secretions or the discharge from some secondary complication, such as otitis media, or through contaminated milk.

Skin tests.—Dochez (8) demonstrated that the type of hemolytic streptococcus found in the throats of scarlet fever patients was a specific and distinct type which could be differentiated from streptococci causing other forms of angina and general septic conditions. The work of Dick and Dick (9) shows that the scarlet fever streptococcus may be distinguished by growing it in broth and obtaining a soluble toxin which will give a skin test neutralizable with convalescent serum. This skin test, now known as the Dick test, is made by injecting intradermally in the forearm 0.1 c.c. of scarlet fever streptococcus toxin in correct dilution. A positive reaction occurs in twenty-four hours and is indicated by a red, inflammatory area about two centimetres in diameter. The reaction from the Dick test fades rapidly after twenty-four hours; so the test must be read twenty-four hours after it is made.

Negative reactors.—The Dick skin test seems to be reliable for detecting those persons who are susceptible to scarlet fever, but it is complicated by the fact that one negative reaction does not always seem to indicate immunity. Thus, among a series of 286 negative reactors, scarlet fever subsequently developed in eight. This phenomenon of negative reactors among susceptible persons permits of two possible explanations: 1. It may be assumed that the scarlet fever toxin has weak binding power with the tissue cells and that some injections of toxin are made in areas of skin where, for some reason, the toxin is absorbed too quickly to permit of its characteristic irritating effect being produced on the skin cells. 2. Different batches of toxin vary in their stability. Some retain their potency for a time and then suddenly deteriorate. This sudden loss of potency can be ascertained only when the toxin fails to produce a reaction in a person who previously had been shown to be Dick positive.

Immunization.—When the toxin is used for immunization, the dose employed is equal to a certain multiple of the amount of toxin used for the Dick or skin test. Hence, the dose is expressed as consisting of a certain number of skin test doses (S. T. D.) of toxin. At first, comparatively small doses were used, namely, 125, 250 and 500 S. T. D. given subcutaneously at intervals of one week. Out of 1500 children so immunized, when the Dick test was reapplied two or three months later, about fifty per cent. of them showed positive Dick reactions indicating that no immunity had developed. In another series of 900 children in whom the dose used was 125, 500 and 1,000 S. T. D., at the end of three weeks, retesting by the Dick method showed eighty per cent. negative reactors or eighty per cent. immunity. Again, in a series of 3,000 cases, doses of 1,000, 2,000 and 4,500 S. T. D. were used; and, after six weeks, fifty per cent. were still susceptible as shown by retests. Zingher in New York adopted doses of 250, 1,000, 2,000 and 3,000 S. T. D. Nesbit in his work in the public schools of Indiana used 4,000 S. T. D. for the final dose. The tendency now is to use doses of 500, 1,000, 2,500 and 5,000 S. T. D., although the Dicks advocate very much larger doses up to 20,000 S. T. D. which sometimes cause reactions simulating true scarlet fever. Hence, it would seem that the best dose for immunization had not as yet been definitely established.

Immunity.—It is not known how long the immunity will last from the toxin injections, but there is reason to believe that the immunizing treatment has produced worth while results, although improvement doubtless will be made.

However, instead of attempting to immunize exposed children with toxin, many clinicians prefer to keep them under observation for a week or two and, at the first sign of sore throat, to administer a therapeutic dose of antitoxic serum.

Serum treatment.—Scarlet fever antitoxin unquestionably marks the greatest advance in preventive medicine during the last decade. Clinical trials indicate that this new product is destined to prove as important and valuable a factor in the control of scarlet fever as is diphtheria antitoxin in the diphtheria.

Credit rightfully belongs to Dochez (10) for having first produced an antitoxic horse serum against the scarlet fever streptococcus, and for having tested its capacity to neutralize the rash locally in the skin in human cases of scarlet fever. Credit must also

be given to Dochez for having demonstrated, with the cooperation of Blake (11), the clinical value of the serum in the curative treatment of scarlet fever.

Mechanism of disease.—The clinical features of the acute stage of scarlet fever depend on two properties of the scarlet fever streptococcus. First, the property of elaborating a specific toxin; second, the property of invading tissue. The manifestations of the first property are the acute intoxication, fever, rapid pulse, leucocytosis, strawberry tongue, and the scarlet rash. The manifestations of the second are the septic complications.

The duration of the specific toxemia parallels that of the scarlet rash. When the rash has faded, the specific toxemia has been overcome. The amount of specific toxin in the patient increases each day of the disease until the rash fades; but especially the amount varies with the extent of the septic complications and is frequently extremely high in those cases with an extensive purulent rhinopharyngitis.

Indications.—All cases of the disease with a bright rash should be treated with antitoxin. In very mild cases seen on the third and fourth day, if the rash is clearly fading, antitoxin treatment may be withheld. In late cases with fading rash, slight benefit may be expected; and if the rash has faded, no benefit may be expected from antitoxin treatment.

Dose.—The rash indicates the necessity for antitoxin treatment, while the extent of the sepsis is the guide to the amount of antitoxin needed.

In all but the most severe cases, the antitoxin may be given intramuscularly into the middle anterior thigh. In extreme cases, a few hours may be gained by intravenous treatment.

The smallest or basic therapeutic dose in children or adults should be an amount that will neutralize 600,000 standard skin test doses of toxin. If the disease is moderately severe or the case is not treated until the fourth day, this dose should be doubled. If there are marked septic complications present, the basic dose should be tripled if treated by the third day; and quadrupled if treated after the third day.

Repeated dose.—If the patient remains sick twelve to twenty-four hours after treatment and the rash has not begun to fade, antitoxin treatment should be repeated. If the patient remains sick after treatment and the rash has completely faded, further antitoxin will be of no benefit.

Results.—With adequate doses, the results of antitoxin therapy are striking. Treatment should cause, within twelve to eighteen hours, a marked subjective improvement, critical fall of temperature and pulse, and fading of the rash. If the rash is old, the bright blush should disappear; but pigmentation will remain.

Little or no direct effect from antitoxin treatment may be expected on the course of septic complications. These are presumably indirectly benefited by curing the patient of the specific toxemia. Possibly the extension of septic processes may be checked by the administration of an antitoxin which also contains antibacterial bodies.

Prophylaxis.—The use of scarlet fever antitoxin for prophylaxis is not advised except in unusual circumstances: because, 1, the immunity is at best of only two to three weeks' duration; 2, the incidence of infection after exposure is only about twenty per cent.; and 3, where infection is expected, the disease can be cured on the first day by antitoxin treatment.

SMALLPOX

The United States has the unenviable distinction of reporting more smallpox during 1925 than any other country except India, namely, 43,193 cases. The largest number of cases in any one state was in California which led with 4,921. All of the six New England States together had but 102 cases, 94 of which were in Rhode Island. It is well to bear these figures in mind as a justification for the relentless application of vaccination, and the many advantages of the puncture method should appeal alike to the health officer, school physician and general practitioner.

Advantages of puncture method.—1. The virus may be wiped off immediately after vaccination; no waiting for the wound to dry before clothing touches it. 2. The least painful of any method. 3. Leaves practically no scar; hence, is an added advantage when vaccinating girls. 4. Insures greatest freedom from sore arms and infection. 5. Is the safest procedure in vaccinating infants and young children.

TETANUS

The experience gained during the World War emphasized the immense value of antitoxin in the prevention of tetanus, and demonstrated the importance of freely cutting away all dead tissue within and about extensively lacerated and contused wounds.

Types of wounds.—In every case of open wound accompanied by laceration and crushing of tissue; of punctured wounds made by iron nails, knives, sea shells and large splinters which cannot be thoroughly sterilized; bullet wounds, blank cartridge wounds or any wound into which street dirt or garden soil has been ground, an immunizing dose of tetanus antitoxin should be given and the wound at the same time should receive thorough surgical treatment. In those cases in which the wound continues to slough and show signs of infection, and in gunshot and deep-seated wounds, the dose should be repeated within a week; because the toxin which is gradually formed must be completely neutralized in order to prevent symptoms of tetanus. Moreover, tetanus spores may persist in a wound and cause "delayed tetanus" after the immunizing effect of antitoxin has worn off.

Prophylaxis.—For prophylactic purposes, the antitoxin should be administered subcutaneously, preferably in the interscapular region, so that it will be absorbed slowly and the immunity will persist for a maximum period seven to ten days. The immunizing dose now generally agreed upon is 1500 units. This dose was finally adopted by the British War Office after it had been shown that smaller doses were inadequate.

Deaths from tetanus in the state of New York from 1907 to 1925 were only one third the number which occurred eighteen years ago. This can be attributed to no other cause than the more general use of tetanus antitoxin as a preventive.

Prognosis.—The prognosis of tetanus treated without antitoxin has been exceedingly unfavorable, the mortality being estimated at seventy-four to eighty per cent. Most fatal cases occur within the first six days, and patients living to the sixth day are much

more likely to get well. The late appearing cases of tetanus, in which symptoms first occur ten or more days after the injury, give the most favorable prognosis. And cases of socalled delayed tetanus, which occur after the immunizing effect of the prophylactic dose of antitoxin has disappeared, also have a good prognosis.

When treatment with antitoxin administered by the intraspinal method was employed promptly after the recognition of tetanus symptoms, recoveries occurred in fifty to eighty per cent. of the cases. The early administration by the intraspinal route of large doses of tetanus antitoxin is essential for the successful treatment of a case of tetanus; because, after tetanus toxin up to a certain amount which constitutes the "fatal limit" has combined with the cells of the central nervous system, no amount of tetanus antitoxin can save the life of the patient.

Antitoxin treatment.—The extensive experience gained in the World War has proved that the intraspinal method of administering tetanus antitoxin should be given preference over all other methods. The intraspinal injection of antitoxin, warmed to body temperature, should be given slowly by gravity and always, if possible, under an anesthetic such as chloroform.

The technic of intraspinal administration includes making a lumbar puncture between the third and fourth lumbar vertebrae and withdrawing cerebrospinal fluid. The fluid should be allowed to flow until the cerebrospinal fluid pressure falls to normal; one drop from the needle every three to five seconds being about normal. In case of a "dry tap" which has been reported on good authority as occasionally occurring in tetanus, the intraspinal injection of antitoxin should be given cautiously.

If only a limited supply of tetanus antitoxin is immediately available, it should be given by intraspinal injections in preference to all other methods of administration.

Dose.—The dose recommended for the complete antitoxin treatment of all cases of tetanus comprises for the first day, five thousand to ten thousand units intraspinally and ten thousand units intravenously; second day, five thousand to ten thousand units intraspinally; third day, five thousand units intraspinally; and fourth day, five thousand to ten thousand units subcutaneously.

When the recommended dose and method of treatment are followed, improvement is usually manifested in forty-eight hours after the first intraspinal injection; and the improvement becomes progressive. However, the trismus and rigidity will persist after the above mentioned antitoxin treatment has been completed, but these symptoms will gradually improve without further administration of antitoxin.

Supplemental treatment.—In addition to the antitoxin treatment, proper surgical treatment for the wound should be applied and the patient placed in a quiet, darkened room with competent nursing facilities. The patient should be protected as carefully as possible from noise, excessive light, drafts, jars and other forms of irritation.

In case the wound has not already been given thorough surgical cleansing, it ought to be widely opened by free incision to cleanse it thoroughly and remove foreign substances. It is recommended that the wound be irrigated with hot peroxide of hydrogen, then swabbed out with two per cent. alcoholic solution of mercurochrome and loosely packed with gauze soaked in the same solution.

The convulsions should be controlled by sedatives, such as chloral hydrate which is well borne in tetanus cases. Many patients experience great relief from warm baths twice daily which have a decided calming effect and also tend to diminish the trismus. An adequate supply of fluid nourishment should be given, and careful attention paid to elimination by the kidneys and bowels.

(*To be concluded*)

Disease of the Lymphatic Glands Caused by Tooth Infection

A Clinical History

OLIVER T. OSBORNE, M.A., M.D., F.A.C.P.

New Haven, Conn.

Immediate history.—This patient, a woman fifty-six years of age, was first seen by me on May 12, 1924. Her immediate history was that she had discovered enlarged glands in both axillæ, the one on the left side being the larger. This gland in the left axilla was surgically removed (in another city) on April 19, 1924, less than one month before I saw her, and two separate microscopical examinations were made and the condition diagnosed as Hodgkin's disease. She was then advised to have immediate removal of several other glands, the one in the other armpit and several enlarged glands in her neck. She then saw two other physicians, and was sent to a noted blood specialist in another city who studied her general condition and the microscopic specimens of the gland that had been removed and advised strongly against operation, and stated that he thought the condition was one of lymphosarcoma, and advised the use of radium on the glands. The prognosis made in both cities was very unfavorable.

Past history.—This patient had been married only thirteen months, and had never been married before. The menopause occurred seven years ago without any disturbance of her general health. She rarely had had headaches. Had worn glasses for ten years; had slight astigmatism, slight hypermetropia, and had presbyopic lenses. When a child she had severe scarlet fever with an abscess in a gland of the neck, upper right side, the scar of which is still present. She had typhoid fever at sixteen years of age. She had never had any other serious condition, even colds or tonsillitis.

She noticed the enlarged gland in the left axilla only two weeks before it was removed, namely, about six weeks before I first saw her. The wound healed nicely, and there were no indurations or swellings in that region. The enlarged gland in the right axilla she says is smaller than it was a few weeks ago. The gland removed from the left axilla was a little larger than a plum.

The family history is entirely negative as bearing any relation to her condition.

Present condition.—She has not lost weight. Her appetite is fine; no indigestion, nausea, or vomiting. Bowel action is normal without medicine. She eats meat once a day and a normal amount of carbohydrates and fats, eats considerable butter, a normal amount of salt; dislikes sweets, likes acids; takes one cup of coffee and two cups of tea a day. She sleeps well. Nocturia once or twice. Rather frequent urination in the morning, but normal in the afternoon. Perspiration is slightly subnormal. She says she feels perfectly well, if she was not so terribly frightened. Her weight is normal, and she is well nourished.

Examination.—The tongue is slightly coated. Tonsils and throat are normal. Teeth look fine. About two months ago she had one tooth extracted which was not dead, and there was no pus in the tooth socket, but it "just bothered her a little." Her hair is fine and does not fall out. Hands tend to be dry. One finger of the left hand shows a slight gouty condition. She gives no history of rheumatism or joint pains. Pupils react normally. Patellar reflexes are normal. There is no edema; no soreness of the bones; no eruptions, and she never had any eruptions. The lungs are normal; heart sounds are normal, not strong, no murmurs, normal size. The abdomen is negative. Spleen and liver apparently normal. Pelvis is negative. No glands found in the abdomen; no enlarged glands in the groins. The pulse is 76, weak and regular. The blood pressure is 102 systolic; 68 diastolic.

In the right axilla there is a gland which is very slightly enlarged. In the left side of the neck is a small gland or nodule, not larger than a large pea. In the right neck, rather low down, is a small gland which she says varies in size from time to time and has been present for five years or more. At the present time this is about the size of a small hazelnut. She says when this gland swells there is a small nodule occurs simultaneously just back of the mastoid process in the occipital region. Also a gland enlarges towards the shoulder just above the clavicle on that side.

Examination of the urine was negative. Red blood corpuscles were 3,912,000; hemoglobin 60 per cent.; 10,000 white blood corpuscles; polymorphonuclears 47 per cent.; large and small lymphocytes 48 per cent.; eosinophiles 5 per cent. In other words, there was a moderate anemia and a relative lymphocytosis.

Examination of the tonsils, nose, nasopharynx, and sinuses was negative and showed no infection. Examination of the feces was negative; normal digestion; no parasites. X rays and examination of the teeth showed every tooth to be alive and normal, except the upper right lateral which shows infection at the apex. X ray pictures of the chest were negative. On May 23, 1924, this tooth was extracted and laboratory culture showed Staphylococcus aureus and Streptococcus nonhemolyticus.

In view of the serious diagnoses and prognoses that had been given by good men and specialists in two different cities, I did not give her much encouragement, but told her that her condition could be due entirely to focal infection proceeding from this tooth and perhaps from the tooth that had been previously extracted.

TREATMENT

She was put upon a liberal protein diet and given red bonemarrow and spleen tablets.

On May 29, 1924, the gland in the right axilla had all but disappeared, in fact, it was apparently normal in size. In the left axilla there was no gland to be felt, and no induration; this was where the gland had been removed. The small gland in the left neck was just palpable. The gland in the right neck remained about the same size. The blood count at this date, May 29th, showed the red cells to have increased to 5,184,000; hemoglobin 80 per cent.; total white count 12,800; polymorphonuclears 45 per cent.; large and small lymphocytes 52 per cent.; eosinophiles 3 per cent., a continued moderate relative lymphocytosis.

At this date, besides the treatment outlined above, she was given one grain of thyroid extract a day.

July 8, 1924: Condition had continued to improve. She had gained several pounds in weight. There were no enlarged glands to be found anywhere except that small nodule in the right side of the neck, the one she had had for so many years. Treatment was temporarily stopped.

September 25, 1924: She complained of feeling a little weak. Blood examination shows 4,152,000 red corpuscles; 75 per cent. hemoglobin; 7,300 leucocytes; polymorphonuclears 38 per cent.; large and small lymphocytes 54 per cent.; eosinophiles 4 per cent. and 4 per cent. myelocytes. The blood pressure was still low, 105 systolic; 65 diastolic. She was given tonics, including iron, and intermittently small doses of thyroid extract, which always stimulated her and seemed to improve her general condition.

January 9, 1925: Throughout the fall of 1924 treatment kept her pretty well, but not strong and sturdy, and there were frequent enlargements of that old gland in the right neck, with the occipital gland enlargement and enlargement of the gland toward the shoulder region above the clavicle on the right side; never any other gland enlargements. Occasionally some little shoulder and knee pains occurred. The blood count at this date showed 4,664,000 red cells; hemoglobin 80 per cent.; white cells 12,200; polymorphonuclears 42 per cent.; large and small lymphocytes 56 per cent.; eosinophiles 1 per cent.; basophiles 1 per cent., still this relative lymphocytosis. Another blood count was made on February 9th, which showed practically the same condition as the last, namely, increased total leucocytes and relatively increased lymphocytes.

May 11, 1925: The blood count at this date was: red corpuscles 4,588,000; hemoglobin 90 per cent.; total leucocytes 15,800; polymorphonuclears 46 per cent.; large and small lymphocytes 53 per cent.; eosinophiles 1 per cent.

I then decided that this gland which was always evident and at times would enlarge and cause other glands to enlarge (at least I so interpreted it), should

be removed. Dr. William F. Verdi, of New Haven, concurred in this opinion, and removed the gland on May 13, 1925. Laboratory examination by Dean Milton Winternitz, of the Yale Medical School, without knowing anything of the history of the case, caused him to state that it looked like an early Hodgkin's disease; that it was not lymphosarcoma.

October 8, 1925: During the summer the occipital gland and the gland at the right side of the neck toward the shoulder entirely disappeared as far as palpable evidence showed. The blood count at this date showed 5,680,000 red corpuscles; hemoglobin 80 per cent.; total white corpuscles 8,800; polymorphonuclears 55 per cent.; large and small lymphocytes 45 per cent.; in other words, the blood count was practically normal.

March 8, 1926: The blood count showed 4,424,000 red corpuscles; hemoglobin 70 per cent.; total leucocytes 9,100; polymorphonuclears 67 per cent.; lymphocytes 32 per cent.; eosinophiles 1 per cent., and all cells normal.

Present condition.—This patient, now fifty-eight years of age, has occasionally some slight indisposition, but retains her weight, has no enlarged glands, and is really very well. The blood pressure is always a little too low, but she is active, and able to do all ordinary things.

COMMENT

It would seem there could be no better proof than this case to show what tooth infection and an infected gland can do. Her socalled Hodgkin's disease did not progress, lymphosarcoma did not develop, and at the present time she has not an abnormal enlarged gland anywhere discoverable, and her blood count has become practically normal, with a tendency towards slight anemia if she does not occasionally take some extra iron or a little thyroid.

This patient has asked me to publish an account of her illness that perhaps someone may not be condemned to dangerous operations or to hopeless prognosis when possibly focal infection is at the bottom of the trouble. Certainly, the seriousness of focal infection, especially of the teeth, cannot be too much emphasized.

Ureteral Obstruction as Etiological Factor in Renal Calculus*

A. RAVICH, M.A., M.D.
Brooklyn, N. Y.

In view of the high state of efficiency that the specialty of urology has attained in its diagnostic capabilities, it is surprising how relatively unfamiliar this fact still remains to the average physician. Every practitioner seems to be on the alert regarding such conditions as appendicitis, cholecystitis, cholelithiasis, gastric ulcer, and other similar conditions, even though in many instances, in spite of all the clinical data at his disposal, the diagnosis cannot be arrived at with absolute certainty.

Numerous instances occur daily of operations performed and normal appendices, gallbladders, tubes, and ovaries removed; of stomachs and even kidneys opened or removed without presenting any definite pathological condition. The surgeon, however, is not the only one at fault; the gastroenterologist who treats these poor, much abused stomachs for years without giving the patient the desired relief is just as faulty. Too much attention being given to a one-sided biased history, the patient is put through numerous complicated examinations at the latter's great expense and inconvenience. When a simple but careful microscopic analysis of urine is needed, which requires a few moments and no special paraphernalia or knowledge, many of us consider it beneath our dignity to do it ourselves or unworthy of the time it takes. Instead, we often depend upon an inexperienced and disinterested layman for the accuracy of a report which necessarily plays a very important rôle in the diagnosis. On the other hand, even thoroughly reliable reports very frequently receive but hasty and inadequate attention from the physician in charge of the case. How often does one come across instances in which a careful uranalysis will completely reverse the previous opinion of a case in question, even to the extent of withholding consent to operative interference.

In the meantime, owing to incomplete study, many a patient is operated upon for some chronic condition and an apparently normal organ is removed upon the supposition that it is chronically inflamed. If the same symptoms persist after operation, the blame is then attributed either to the patient's nerves, another organ or to socalled "postoperative adhesions." The cases of renal and ureteral calculus and obstructions that have had previous appendectomies performed without relief are so numerous that one becomes somewhat skeptical at times of the existence of chronic appendicitis *per se*. Why do such errors in judgment and diagnosis still continue? It is probably not entirely the fault of the doctor. It would be a simple matter to discover the disturbing factor if we were not possessed of so many reflex and sympathetic bypaths. Such a complicated state of affairs, therefore, should make us doubly cautious. To make a diagnosis of fracture without corroboration by the x ray would now be considered poor judgment. So, too, in the diagnosis of syphilis, no one would now make a positive diagnosis of this disease without bringing to his aid such positive laboratory examinations as the dark field and Wassermann tests. Still, we have all witnessed operations performed for the relief of indefinite symptoms which later upon more careful examination were found to be due to renal or ureteral calculus. This remains prevalent in spite of having at our command such a positive diagnostic combination as urinalysis, radiography, cystoscopy, and pyelography. If one or more of these be utilized in atypical abdominal ailments many an unnecessary operation can be avoided.

Under the old presumption that diet was the pre-

*Read before the Brooklyn Urological Association March 10, 1925.

dominant factor in the formation and growth of renal and ureteral calculi, numerous diet lists had been elaborated and patients were deprived of almost every conceivable kind of food without any effect on the growth or recurrence of these stones. After removal of these calculi, he would be warned against imbibing any liquid save distilled water, and eating any food that was not cooked in such fluid. The

FIG. 1.—Case of right ureteral calculus with hydronephrosis and multiple strictures of the ureter. C shows location of calculus.

patient would be so bewildered by the long array of foods to avoid that he would naturally cheat a little, either knowingly or unknowingly. When such infractions were discovered, we would throw up our hands in horror and blame it all on the wrongdoings of the poor patient. As a matter of personal belief, I cannot recall a single instance in which a reasonable normal nonirritating diet *per se* played any part in the formation or recurrence of calculi, nor have I seen any prevented by the most rigid diets. L. D. Keyser of the Mayo Foundation (1) after an exhaustive experimental study comes to the conclusion that diet alone plays no part in the formation of urinary calculus, and that oxalurias, phosphaturias and excessive uric acid excretion are more of endogenous than of exogenous origin. In the first two conditions as well as in gout, contrary to popular opinion, one rarely finds an accompanying calculus deposition.

This being the case we must look elsewhere for the etiology of renal stones. In accordance with the views first expounded by Dr. Guy L. Hunner, it seems that we are now closer to the solution of this mystery than ever before. He contends that ureteral obstruction such as stricture usually precedes and is an important factor in the formation of calculi. Given a patient with a lithic diathesis plus a chronic irritation of the mucous membrane of the upper urinary apparatus by obstruction somewhere along the urinary tract, the end result will be a renal or ureteral calculus. One can very logically refer to the many cases of pyelitis, ureteral strictures, etc., without calculi. So, too, there is such a multiplicity of hypertrophied prostates, enlarged median bars and other obstructive lesions at the neck of the bladder associated with cystitis, yet in only relatively few of these do vesical stones develop.

Why then should mechanical obstruction play such an important rôle in the formation of calculi? In answer to this, it is well known that calculus in female bladders is almost unheard of except when it grows around sutures that have penetrated the vesical mucosa or around foreign bodies. Lithic diathesis is apparently about equally divided among males and females; for where both are subject to similar obstructions as is seen in the kidney and ureter which are anatomically similar in both sexes, the incidence of calculus formation is evenly distributed between the two. Vesical calculi in male bladders, however, are of common occurrence because we have that all important, yes, one might say, the most essential factor in stone formation, viz., obstruction to the urinary outflow. Urinary stasis and the inflammation of the mucous membrane thereby produced, will in some unknown way cause a disturbance in the normal colloidal mechanism of the urine with a consequent crystallization and fusion of the urinary salts. A urinary apparatus, be it kidney or bladder, that empties itself properly at all times, does not form calculi. Granting the above assumption then, it would be fallacious to open up a kidney

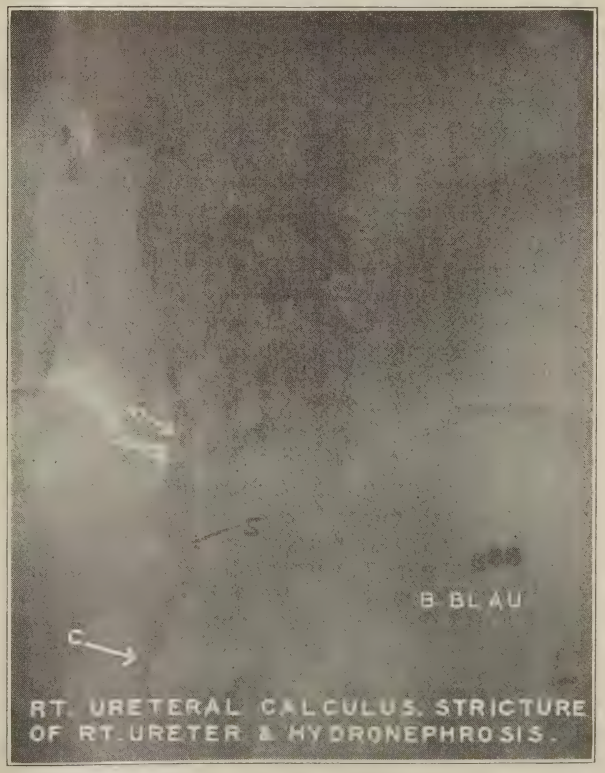

FIG. 2.—Case of right ureteral calculus with hydronephrosis and multiple strictures of the ureter.

or ureter for the removal of a stone without at the same time or subsequently thereto clearing up the obstruction in the urinary passage that played such an important part in the original pathology. This is probably the reason why statistics report such a large proportion of recurrences after the spontaneous or operative removal of urinary calculi. Recurrence of

calculi can usually be presented by occasional but repeated dilatation of the ureteral obstructions that are found present in these cases.

In doing a partial or complete nephrotomy, sutures must be placed into the renal substance to check hemorrhage. This procedure produces a four fold injury. First, it brings in such irritating foreign bodies as sutures and blood clots; secondly, it constricts some

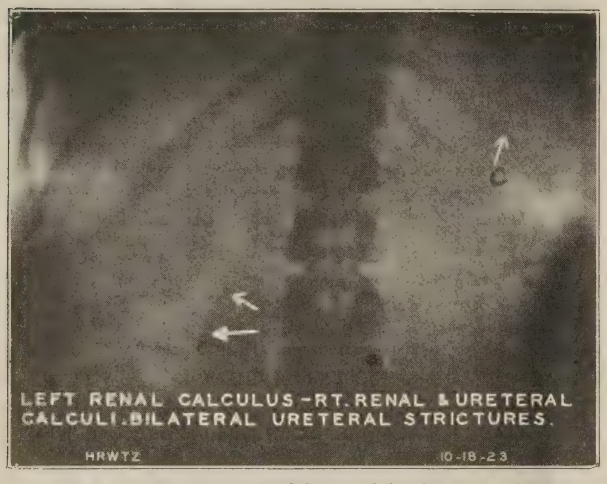

FIG. 3.—Shows the two calculi impacted in the upper right ureter and the pyeloureterogram on the left side shows the stricture of the upper portion of the left ureter which is the apparent etiological factor in the formation of the left renal calculus.

portions of the kidney tubules causing stasis of the urinary flow in the part so treated; thirdly, it creates microscopic or macroscopic pools or lakes in which the urine stagnates, and fourthly, it produces some unknown physiochemical reaction or disturbance which conduces to further crystallization of the urinary salts with the resultant recurrence of renal calculi. This is the reason that pyelotomy where possible has become the operation of choice for the removal of renal calculi, and why so many complete nephrotomies have been followed by the formation of large stones, which subsequently required nephrectomy. Pyelotomy, however, when feasible, does a minimum amount of damage to the kidney, for if properly performed it does not add to the urinary stasis in the kidney. The only drawback to the operation is that many surgeons still fail to correct the urinary obstruction which in accordance with the above reasoning is the essential predisposing cause for the formation of the stone. These cases must be followed up after operation until the ureteral obstruction and the postoperative infection are cleared up.

If there were no obstructions in the ureter the passage of the ordinary sized stone should be a very simple matter and in the course of one short attack of colic the calculus should be shot out into the bladder. Clinically, however, we have all frequently observed the difficulty with which even tiny calculi are expelled from the ureter and how numerous and severe the attacks necessary to accomplish this result. It is a common occurrence to see stones no larger than a B. B. shot require months of persistent cystoscopic treatment before being passed out into the bladder.

The following cases are cited to illustrate the dire results of inadequate study:

CASE I.—A physician of fifty having had pain in the right iliac and right lumbar regions for ten years, had had an appendectomy performed without relief of symptoms. X ray examinations for several years subsequently were apparently negative. Somewhat later a tiny calculus was discovered in the right kidney. Several cystoscopies and pyelography failed to dislodge the stone. A nephrotomy was accordingly performed by a recognized surgeon but in spite of a painstaking search the calculus could not be found. Less than a year later the patient was again radiographed and instead of the tiny calculus present before operation he now had a good sized stone. This had continued to grow until at the present time he has a calculus the size of a plum. The patient still had more or less constant dull backache with occasional attacks of sharp pain in the right iliac region. It is reasonable to suppose that if this man's ureter were dilated in the first place, the calculus might have remained practically stationary in size and with continued manipulations might have passed out into the bladder. Furthermore, even after the nephrotomy, had adequate urinary drainage and disinfection been provided by correction of the ureteral obstruction the calculus, in all probability, might not have grown so large in such a short time. Having had such bitter experience, the patient loathes to have any other operative work performed. During the past year he

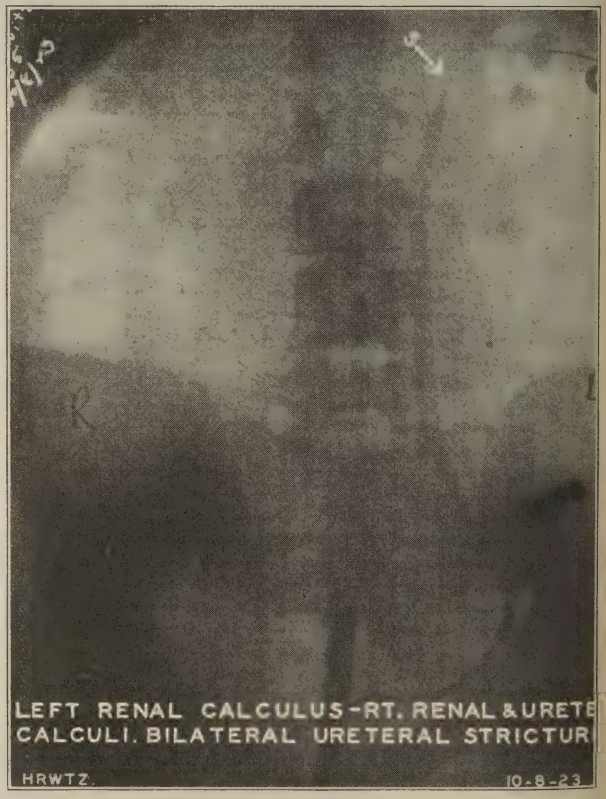

FIG. 4.—Shows the two calculi impacted in the upper right ureter and the pyeloureterogram on the left side shows the stricture of the upper portion of the left ureter.

has obtained considerable relief by occasional ureteral dilatations.

CASE II.—Another case of hasty and careless surgical interference is that of a woman who came into the hospital with typical attacks and history of right

renal colic. Radiographs showed two fairly large but very indefinite shadows in the lower calyx of the right kidney. Microscopic blood was found in the urine. A pyelogram was made and was not considered particularly abnormal. A ureterogram was not done. On

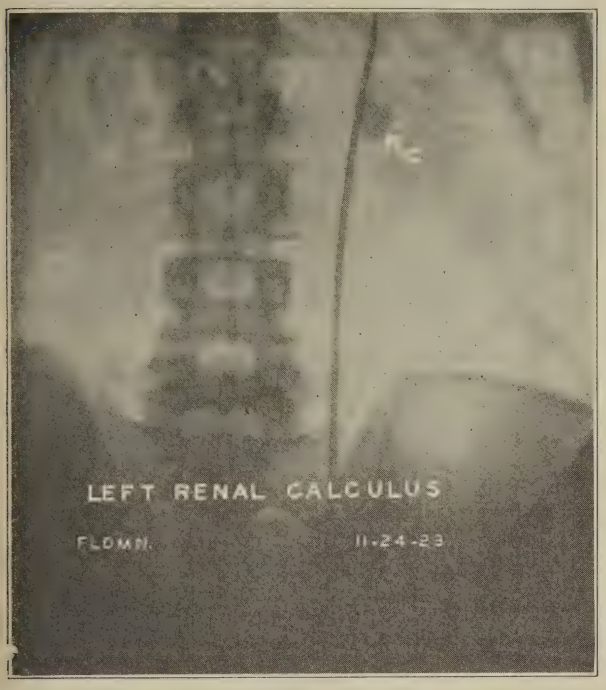

FIG. 5.—Shows the calculus in the renal pelvis and the pyeloureterogram shows the strictures which accompany this condition.

the strength of the urinary findings, symptoms and the indefinite shadows reported by the radiologist, a diagnosis of renal calculi was made. The surgeon performed a partial nephrotomy but in spite of a thorough search the supposed calculi were not found. A more careful review of the preoperative findings and radiograms proved this to be a case of ureteral stricture which could have easily been corrected by nonoperative means.

The number of patients treated or operated upon for divers conditions, that, after more thorough investigation are found to be due to stone, must be enormous. If the poor patient is unfortunate enough to have a calculus in the right ureter, he is indeed lucky if he comes out of the fray minus a mere appendix or gallbladder. Those others who are just sentenced to the strict dieting that follows the diagnosis of gastric or duodenal ulcer are comparatively fortunate.

The latter brings to mind an intelligent woman, who for years had been treated medically for gastric ulcer by some of our foremost gastroenterologists. Gastric contents and numerous gastrointestinal radiographs were examined with great care. Even urines had been examined; with what pains it is difficult to state. At any rate no significance had been attached to the pus, erythrocytes and bacteria which were found in the urine. A careful cystoscopy, x ray and pyelography established the presence of a medium sized obstructing calculus in the lower right ureter with a marked hydroureter and a functionless pyonephrotic kidney sac which was removed. Had this patient been radiographed without bismuth and had her urine been examined as assiduously as her gastric contents, she probably would still have had the two kidneys with which Nature had endowed her.

CASE III.—Another patient who unluckily fell into the ever increasing army of appendectomized individuals is a young man of thirty-three who had a sudden attack of severe colic over the appendicular region which awakened him from a sound sleep. After three such attacks, and in spite of the history of microscopic hematuria for six months and the pleading of the patient for an x ray examination, appendectomy was performed. Within a short time the colic recurred and a diagnosis of "adhesions" was made. A urological examination revealed a microscopic hematuria, a small calculus about the size of a pea in the lower right ureter, a hydronephrosis and multiple strictures of the ureter, as shown in Figs. 1 and 2.

CASE IV.—A poor unfortunate woman of twenty-eight has had more than her share of misfortune. For five and a half years she had had bilateral lumbar pain. For a sudden attack of abdominal distention and colic, one and a half years ago, she was operated upon for hemorrhagic pancreatitis and her pancreas drained. About nine months later, for a sudden attack of right upper abdominal colic, she had a so-called chronic gallbladder removed. Not having anything else of surgical importance to remove, and because of continued suffering, she submitted to a careful urological and radiographic examination. This revealed a microscopic hematuria, a small cal-

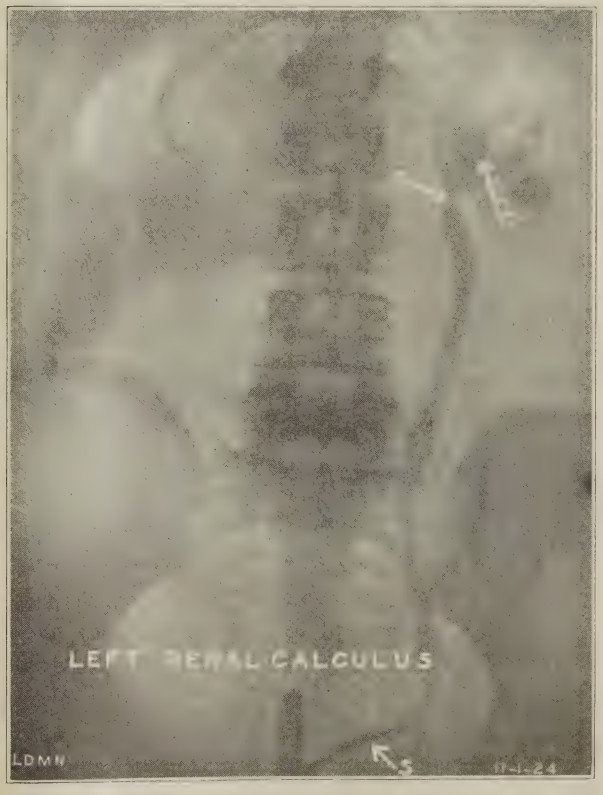

FIG. 6.—Shows the calculus in the renal pelvis and the pyeloureterogram shows the strictures which accompany this condition.

culus in the right renal pelvis, a very tight stricture and small calculus in the upper right ureter which remained stationary in spite of several ureter catheterizations, and a fairly large calculus the size of a small hazel nut in the upper calyx of the left kidney. Although one cannot say that the urinary condition

was originally the cause of all her symptoms, the evidence is very much in favor of such a supposition. (Figs. 3 and 4.)

Case V.—Lumbago is another ailment which is blamed for many a case of renal calculus and in point of frequency of error, it may easily claim to be a close second to appendicitis. A striking example of this occurred in a woman of forty-four who for many years had been treated for lumbago. The hematuria which she had had fifteen years before never received serious consideration. For two months prior to admission to the hospital she had had a persistent hematuria which was found coming from the right kidney and was checked only after several ureteral dilatations. Large multiple calculi were found in both kidneys and a fairly large irregular calculus in the lower left ureter. In view of the very poor phthalein output and the very bad cardiac condition, she was deemed too hazardous a risk for immediate operation.

Case VI.—Another patient twenty-eight years old had been suffering for nine years from pain in the lower left abdomen. She was finally advised to undergo an operation for chronic left ovarian disease. Examination revealed a calculus the size of a hazel nut in the left renal pelvis with multiple strictures of the left ureter. (Figs. 5 and 6.)

The socalled renorenal reflex has remained an accepted fact for years. Many a time we were surprised to find the calculus on the side which gave no symptoms and everything supposedly negative on the side of the colic. In the light of our present knowledge of kidney and ureter pathology, it is doubtful whether such a condition exists.

Numerous instances of this condition might be cited, but space will not permit. The object of this contribution is to stimulate a more active interest in the brilliant discoveries that have been made during the past decade in the realm of urology with the hope that a more extensive and careful use be made of that accurate and harmess triad—uranalysis, radiography and cystoscopy in the diagnosis and treatment of all atypical abdominal conditions.

CONCLUSIONS

1. A careful microscopic examination of a freshly and properly obtained specimen of urine is of paramount importance.
2. A combination of radiography, cystoscopy and pyeloureterography should be employed more often to establish a diagnosis in atypical abdominal conditions.
3. Diet *per se* apparently bears little if any influence on the formation of urinary calculi.
4. Obstruction somewhere along the urinary tract is probably the most important single factor in the causation of urinary lithiasis and its retarded passage through the ureter.
5. The large percentage of recurrent calculi is due to failure to correct the urinary stasis.
6. Wherever possible pyelotomy is preferable to nephrotomy in the removal of renal calculi.
7. The great majority of ureteral calculi can be made to pass without operative interference.

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Congenitally Misplaced (Pelvic) Kidney*

A. H. FINEMAN, M.D.
New York

Cases of congenitally misplaced kidney are rare, particularly those in which the organ is situated in the true pelvis. Relatively few instances of such an abnormal position have been recorded in the literature. Among the more recent reports are those by Bunce (1), Kasper (2), Anderson (3) and Bryan (4). Because of the rarity of this condition and the interesting anomalous findings that it presents, the following case is herein reported.

Case.—M. J., male, aged twenty-seven, was admitted to the Metropolitan Hospital on December 8, 1925, complaining of weakness and loss of weight for two years and cough with occasional epistaxis for one year. He had fever on and off, with moderate sweats. Six months previously, he was admitted to another hospital with a diagnosis of pneumonia and was confined to that institution until November 8, 1925. Since then he has suffered with cough and nose bleeds and has been getting progressively worse. No other symptoms were present. Dysuria, hematuria and frequent micturition were absent. No pain in the abdomen was experienced. The family history was negative.

Physical examination showed a thin, poorly nourished young man, much underweight (108 pounds) and chronically ill. Dullness, bronchovesicular breathing and moist râles were present over the upper lobe of each lung. The heart sounds were normal. The abdomen was flat and on palpation presented no tenderness, rigidity or masses. The liver, spleen and kidneys were not felt. A clinical diagnosis of bilateral pulmonary tuberculosis was made.

Uranalysis showed a heavy trace of albumin, many hyaline casts, a moderate amount of pus and epithelial cells and an occasional red blood cell. The blood chemistry was normal. The patient had an irregular fever and rapid pulse, became progressively weaker and died on January 10, 1926, about one month after his admission to the hospital.

When the abdomen was opened, two months later, the interesting anomaly was discovered. The right kidney was normal in size, shape and position, possessing an accessory inferior polar artery. The right ureter was eight inches long. The adrenal gland was in its normal position. (Fig. 1.)

The left kidney was found as a retroperitoneal organ in the true pelvis, the upper third overlapping

*From the Department of Anatomy, Columbia University.

the promontory of the sacrum and the pelvic inlet. The organ was firmly fixed and bound down by peritoneum. This kidney was slightly larger than the other and consisted of two portions, a small upper part, mushroomlike in form, and a large flat lower part. (Fig. 1.) The upper portion could be partially rotated forward and to the left, thereby exposing the hilum of the kidney. The renal artery was found behind the upper part of the kidney, arising from the right common iliac and passing downward and to the left to divide into three branches. The renal vein emerged from the hilum, passing upward and to the right, to enter the left common iliac vein. The pelvis of the ureter was situated between the inferior margin of the upper portion and the front of the lower portion of the kidney; the ureter passing in front of and then behind the lower pole to terminate finally in the bladder. The left ureter was less than half the length of the right, being only three and one half inches in extent. An accessory artery was found on the front of the kidney, arising a short distance above the bifurcation of the abdominal aorta and coursing vertically downward, distributing a small branch to the upper portion. The adrenal gland was not in relation to the kidney. Frozen sections of lungs and kidneys failed to demonstrate the existence of giant cells, but considerable round cell filtration was present.

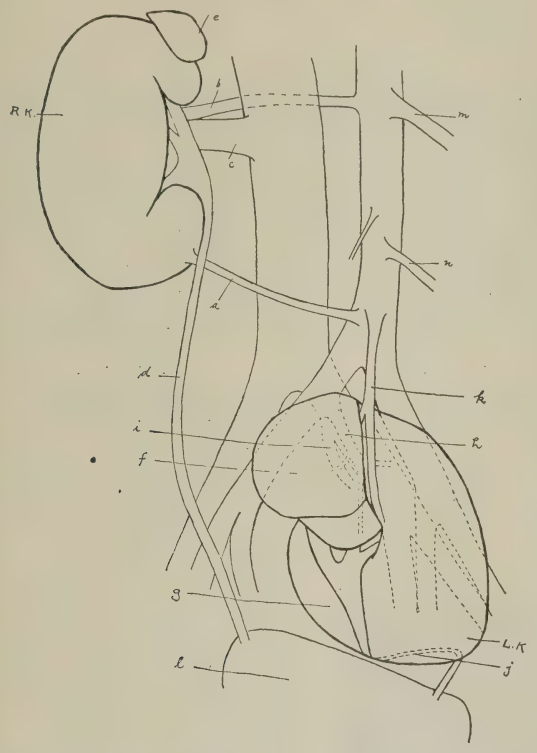

FIG. 1.—Diagram illustrating the relative position of the kidneys: Right kidney, R.K., normally situated, with an inferior polar artery, a; renal artery, b; renal vein, c; ureter, d; and adrenal, e. Left kidney, L.K., situated in the pelvis, overlapping the promontory and pelvic inlet. Upper portion, f, of left kidney; lower portion, g; left renal artery, h; renal vein, i; ureter, j; accessory artery, k; bladder, l; superior mesenteric artery, m; inferior mesenteric artery, n.

COMMENT

A congenitally misplaced kidney is rarely diagnosed during life because it seldom gives rise to symptoms referable to the genitourinary tract and if palpated in the course of a physical examination is usually mistaken for a neoplasm. According to Squier (5) cases are on record where even at operation such anomalies have been misjudged for new growths and removed unnecessarily. In our case, when the abdomen was first opened, the mass found in the pelvis was thought to be a retroperitoneal tumor and only after removal of the serous covering was it identified as an abnormally placed kidney. From the anomalous origin of the renal vessels and the existence of a shortened ureter, it is quite apparent that this abnormality is a congenital one, due to a premature arrest in the ascent of the kidney and differing embryologically from the condition in which the organ is ptosed or dropped, in which instance the blood supply is relatively normal. Mention should be made of the fact that the adrenal gland does not, as a rule, participate in congenital renal misplacements.

In our case, the only finding that might have aroused suspicion of a renal anomaly was the presence of pus in the urine. In cases of pyuria without urinary symptoms, the possibility of renal malformation or misplacement should be considered.

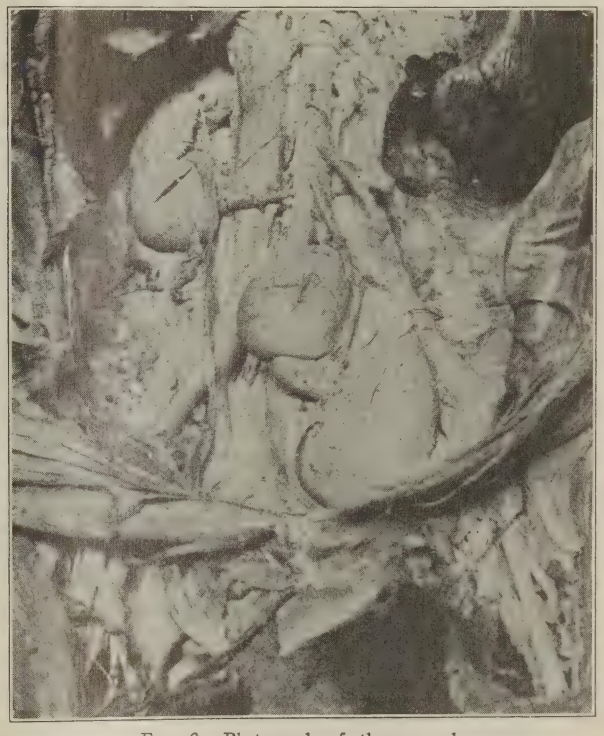

FIG. 2.—Photograph of the anomaly.

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Dermatitis from Adhesive Plaster

With Report of Cases

DOUGLASS W. MONTGOMERY, M.D.
and GEORGE D. CULVER, M.D.
San Francisco, California.

Recently W. P. Brown has reported an interesting case of sensitiveness to adhesive plaster (1). And shortly afterwards a patient come to the office showing a marked example of the same trouble.

A woman forty-five years of age consulted us August 6, 1925, on account of a streptococcic dermatitis. Some weeks previously she had been operated upon for a nevus situated on the posterior aspect of the left side of the chest, and when she came to us the scar was covered with an impetiginous crust, and the skin around it was blazing red. The sensations complained of were a mixture of pain and itching. Besides this she had an erythematous eczema on the base of the neck, and to show how easily one may be led astray by imagined local causes we at first thought that this might be due to a black fur collar she was wearing. When, however, we heard that she had worn it for three years without any trouble arising from it previously we changed our mind.

On the patient's second visit to the office the intense redness about the wound had subsided, and the dermatitis occasioned by the adhesive bands came out with startling clearness as a sunburst shown in the photograph, and one of the interesting features was that it had now been four weeks since any plaster had been applied. It was a surprise to us to learn that the effect of the irritant could endure so long. (Fig. 1.)

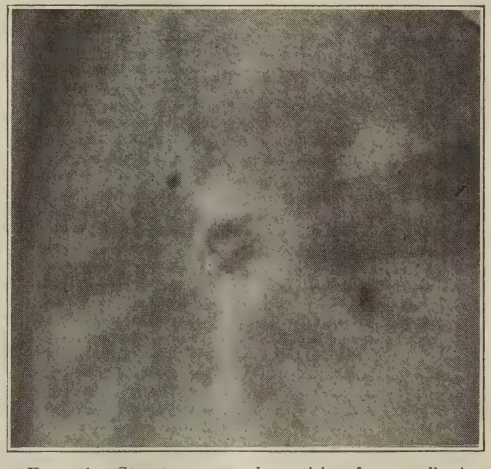

Fig. 1.—Streptococcus dermatitis from adhesive plaster which was used to treat a nevus on the left side of the patient's chest.

How serious this sensitiveness may be, was shown in the case of a friend of ours, a physician in San Francisco, who is extremely sensitive to adhesive plaster, and to turpentine, and an experience he had shows how important a knowledge of this may be to a medical man. On being operated upon for appendicitis he warned his two surgical friends of this sensitiveness.

The surgeon who operated is distinguished by having an enormous hand, and his wound aperture was correspondingly large. I suppose that both the operator and his coadjutor thought that the warnings regarding adhesive plaster were not to be taken too seriously. In closing the wound they had used adhesive plaster very extensively, which aroused a blazing dermatitis, and the reaction had extended also even into the ample wound, causing the most excruciating agony.

Another interesting experience in the same line concerned a man forty-three years of age who was sent to us on account of an eczema, papular of the hands and forearms, erythematous of the face. He said that it had begun seven weeks previously while cleaning the woodwork in railway cars, in which he used turpentine. He said that he had stopped work for two weeks and the eczema had improved, to again become worse on resuming work. While examining him we noticed a bandlike dermatitis on the forearm, which he said was where a strip of adhesive plaster had been applied to support a bandage.

Obviously, the adhesive plaster had caused the bandlike dermatitis, and presumably because of the resin contained in it, and as resin is turpentine devoid of its volatile constituents it was only reasonable to infer that the turpentine employed in cleaning the cars would also aggravate the patient's eczematous skin. Such an opinion was therefore given to the industrial commission.

Extreme susceptibility to adhesive plaster must be, as Dr. Brown has found, rare. In our radium work we use it a great deal and abundantly, in fixing the radium plaques over the lesions treated, and we never have met with a case where its use has been absolutely precluded. In one instance we had to vary from day to day the situation of the adhesive bands, and in another the plaster caused minute folliculitis.

According to a report by the *Journal of the American Medical Association* the methods of making adhesive plasters are more or less secret, but it seems that they all consist of a mixture of rubber, resins, and waxes, with an absorbent powder, such as oxide of zinc, orris root or starch, as a filler.

CONCLUSIONS

1. Adhesive plaster may cause a severe and prolonged dermatitis, which often by its geometrical shape indicates its origin.

2. The dermatitis which is produced by the adhesive plaster is caused by the resin or turpentine which it contains.

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323 Geary Street.

The Serology of General Paresis in the Malaria Treated Cases

ARMANDO FERRARO, M.D.
and THEODORE C. C. FONG, M.D.
St. Elizabeth's Hospital, Washington, D. C.

(*Continued from page* 566)

Table VIII shows the serological modification within thirty-six months after malaria treatment. At this period astonishing changes are seen in the Wassermann reaction in both blood and cerebrospinal fluid; twenty of the twenty-three cases show negative blood Wassermann and sixteen negative spinal fluid Wassermann. The colloidal gold appears improved in almost all the cases and, in two of them reported in the table, the curve is entirely negative. In a few cases the mastic reaction has also been performed and the great majority of the cases show an improvement in the curve.

The oldest patient in our series was inoculated with malaria in December, 1922, and the last spinal fluid was taken three months ago (forty months after the inoculation). His serology is reported in Table IX and it may be seen that the reactions have to be considered as practically normal and not differing very much from the results obtained in some of the cases thirty-six months from treatment.

In order to show the gradual improvement in the serology of paretic cases following the malaria treatment, we have collected in the following tables results of detailed examinations of the cerebrospinal fluid of two cases. In these, nine and eleven spinal punctures were performed at intervals of several months. The gradual improvement starting soon after the malaria treatment can easily be followed.

The influence of repeated spinal puncture on the serological results, and especially on the albumin and cell content, might be questioned. This gave rise to the experimental investigations of Weigeldt and Ropke, who, after repeated spinal puncture at short intervals of time, found that the chemical and morphological composition of the cerebrospinal fluid undergoes some modifications. These conclusions, at least those concerning the serological formula of general paresis, have not been confirmed by Kaltenbach (37), who, after repeated spinal puncture at short intervals of time, could detect no appreciable influence on the previous results.

A question of great interest, especially from the viewpoint of the mechanism of the action of malaria on the pathology of general paresis, is whether any relationship between the temperature, the number of chills and the corresponding improvement exists. Table XII shows the relationship between temperature and serological improvement and Table XIII the relationship between the number of paroxysms and the serological improvement.

We can say, in the beginning, that no parallelism exists between the maximum temperature of the paroxysms and the serological improvement, as with the increase of the temperature the proportions between the unchanged and the improved cases scarcely change; for instance, while, with a maximum temperature of 105°, the number of improved cases are thirteen against ten unimproved, the proportions are six to five with a temperature of two more degrees (107° F.).

But, if we take into consideration the average of the improved cases compared with the average of the number of paroxysms, we soon find that a relationship seems to exist between the number of paroxysms and the percentage of improved cases. With an average of six paroxysms, the average is four improved against fourteen unimproved; the number of improved cases gradually increases, reaching twenty-six improved against eighteen unimproved when the average number of chills is eighteen. A few cases had from nineteen to twenty-four paroxysms, and even in this small number it may be seen that the proportion between improved and unimproved cases was greater.

The next problem is the relationship between the serological and the clinical improvement. In order to answer this question, we must take into consideration, first, the percentage of all the cases serologically improved, and then analyze separately the results obtained in relation to the different periods of time that have elapsed since date of treatment. Forty-four out of eighty-six, i. e., 51.16 per cent. of the cases are serologically improved. But if the percentage is calculated separately as stated above, we easily see how the percentage gradually increases in proportion to the period of time that has elapsed from the date of malaria treatment. For this purpose, the cases have been divided into four groups and, in the first group, the cases of less than a month's duration after the malaria inoculation have not been taken into consideration. The percentage of the improved cases relative to the period of time is as follows:

Within 6 months: 20 cases—
Serologically improved 3: 15 per cent.
Serologically unchanged 17: 85 per cent.

Within 12 months: 22 cases—
Serologically improved 8: 36.32 per cent.
Serologically unchanged 14: 63.68 per cent.

Within 24 months: 15 cases—
Serologically improved 8: 52.8 per cent.
Serologically unchanged 7: 47.2 per cent.

Within 36 months: 39 cases—
Serologically improved 25: 85 per cent.
Serologically unchanged 4: 15 per cent.

These figures show how the serological improvement gradually increases from fifteen per cent. within the first six months to eighty-five per cent. within thirty-six months. The period elapsed from the date of the malaria inoculation to the time of the last spinal puncture is then very important and certainly explains the discrepancies in the percentage of the improved cases, as well as the degree of the serological improvement seen in our findings and in those reported by authors who have not taken into consideration the time factor. By a study of the cases showing serological improvement, as compared with those showing clinical improvement, it may be seen

that in the early stages there is absolutely no parallelism between the clinical and the serological improvement, but as time elapses a higher correlation can be noticed and within twenty-four months the percentage of the improved cases, both from the serological and the clinical point of view, is practically the same. Within thirty-six months the parallelism is still more striking as all of the eighteen cases improved clinically have also improved serologically. But, in addition to this, at this period of time some of the cases which showed no clinical improvement whatever now show serological improvement. The percentage of the improved cases from the clinical point of view within the first six and twelve months is 61.2 per cent. compared with 36.32 per cent. of the serologically improved cases. The percentage is highly modified in the subsequent periods as within thirty-six months the clinically improved cases represent 65.0 per cent. of the cases against 85.0 per cent. of the cases serologically improved.

There is no parallelism, in the strict sense of the word, existing between the clinical and the serological improvement, even in this later period. But while in the earlier stages the lack of parallelism was absolute, in the later period, a partial parallelism exists, in the sense that all improved cases, from the clinical point of view, show a concomitant serological improvement.

The following clinical cases are reported, in order to illustrate the course of the clinical and the serological improvement from the point of view of parallelism, as well as to illustrate discrepancies between the clinical and the serological improvement.

TABLE VI

Serological Modifications Within Twelve Months After the Malaria Treatment

Case Number	Blood Wassermann		Cerebrospinal Fluid							
			Wassermann		Globulin		Cells		Colloidal Gold	
	Before treatment	After treatment	Before	After	Before	After	Before	After	Before	After
1	4400	0000	4443	3000	4 plus	2 plus	134	7	5555432111	1123210000
2	4444	0000	4444	4000	4 plus	plus	68	4	5555432100	4433210000
3	2100	0000	4440	4000	3 plus	2 plus	33	7	5555432000	5555320000
4	4444	0000	4444	0000	3 plus	plus	8	5	5554321000	1122110000
5	4444	0000	4444	0000	3 plus	plus	19	6	5555553210	4432210000
6	4444	0000	4444	4444	2 plus	trace	12	3	5555553210	4333210000

Case illustrating parallelism between the clinical and serological improvement following the malaria treatment.

Case I.—F. J. F. Admitted May 24, 1920, aged thirty-eight. This patient was a lieutenant in the Navy. Fifteen years before the onset of his present illness, he was infected with syphilis and received more or less treatment for three years following the infection. During the war he was ordered to another port and he became suspicious that this was because of a plot on the part of other officers to alienate his wife's affections. He became nervous and worried and made mistakes in his work so that he was finally placed in a naval hospital, where it was discovered that he had neurological symptoms. The serological tests revealed the presence of paresis.

TABLE VII

Serological Modifications Eighteen Months After the Malaria Treatment

Case Number	Blood Wassermann		Cerebrospinal Fluid							
			Wassermann		Globulin		Cells		Colloidal Gold	
	Before treatment	After treatment	Before	After	Before	After	Before	After	Before	After
1	4444	2100	4444	4440	4 plus	4 plus	33	4	5554432000	5555421000
2	4100	3000	4431	4200	plus	plus	20	5	5555430000	2222210000
3	4444	0000	4444	0000	3 plus	plus	8	3	5554320000	1122100000
4	4444	0000	4444	0000	4 plus	2 plus	147	5	5555442300	4332100000
5	4444	0000	4444	0000	plus	plus	16	7	5543210000	1122100000
6	4000	0000	4444	0000	plus	0	12	2	5555431000	0110010000

TABLE VIII

Modifications of Serology Thirty-six Months After the Malaria Treatment

Case Number	Blood Wassermann		Cerebrospinal Fluid							
			Wassermann		Globulin		Cells		Colloidal Gold	
	Before treatment	After treatment	Before	After	Before	After	Before	After	Before	After
1	4400	0000	4444	0000	2 plus	plus	12	4	5555553210	0000111000
2	4444	0000	4444	0000	3 plus	plus	12	3	5555543210	1112100000
3	4444	0000	4444	0000	plus	2 plus	8	7	5555520000	1122100000
4	4444	0000	4444	0000	plus	plus	13	6	5555431000	1111000000
5	4444	0000	4444	0000	2 plus	2 plus	30	2	5555432000	1222210000
6	4444	0000	4444	0000	2 plus	plus	19	4	5555553100	0000000000
7	4444	0000	4444	0000	2 plus	plus	17	6	4333210000	0000000000

TABLE IX

Serological Modifications Forty Months After the Malaria Treatment

Blood Wassermann		Cerebrospinal Fluid							
		Wassermann		Globulin		Cells		Colloidal Gold	
Before Treatment	After Treatment	Before	After	Before	After	Before	After	Before	After
0000	0000	4444	0000	3 plus	00	18	2	5555554530	0011100000

The physical examination on admission revealed a well nourished and built man. Neurologically, the pupils were unequal, the right being larger than the left; they were irregular and reacted very poorly to

light, the excursion being limited. There was a marked tremor of the facial muscles, protruded tongue, and extended fingers. His tongue was deviated slightly to the right. The knee jerks were fairly active and there was slight swaying in the Romberg position. His speech was slurring and he had considerable difficulty in pronouncing the test phrases.

Mentally his stream of talk was retarded but relevant and coherent. Emotionally he showed considerable deterioration. He laughed continually while talking of his trials and troubles. He gave voice to delusions of persecution, but had no appropriate reaction to them. He was also mildly hallucinated in the auditory field. His insight was lacking and his judgment was impaired. He was oriented in all spheres. His memory for both remote and recent events was very poor. Mental calculations were poorly performed.

On April 26, 1923, this patient received the malaria treatment, with a total of fifteen paroxysms. The serological reports prior to the treatment were as follows:

June 11, 1920—Blood W.R. negative.
June 14, 1920—Cerebrospinal W.R. 4 plus, Globulin 2 plus, Cells 12. Gold Curve 55555532100.
August 4, 1920—Cerebrospinal fluid W.R. anticomplementary, Globulin negative. Gold curve 55555554432.
August 19, 1920—Blood W.R. 4 plus, Cerebrospinal fluid W.R. 2 plus, Gold curve 5555544310.
September 11, 1920—Cerebrospinal fluid 4 plus, Globulin 2 plus, Cells 23, Gold curve 5555555310.
February 16, 1921—Blood W.R. 2 plus, Cerebrospinal fluid W.R. 4 plus, Globulin negative, Gold curve 5554321000.
April 7, 1921—Cerebrospinal fluid W.R. 4 plus, Globulin negative, Gold curve 5555310000.
July 7, 1921—Cerebrospinal fluid W.R. 4 plus, Globulin 2 plus, Cells 11, Gold curve 5555553210.
September 21, 1921—Cerebrospinal W.R. 3 plus, Globulin 3 plus, Cells 17, Gold curve 5555432100.
March 22, 1922—Cerebrospinal W.R. 1 plus, Globulin negative, Cells 13, Gold curve 5555432100.
August 16, 1922—Cerebrospinal fluid 4 plus, Globulin 2 plus, Cells 12, Gold curve 5421000000.
April 4, 1923—Cerebrospinal fluid 4 plus, Globulin 2 plus, Cells 12, Gold curve 5554321000.

The serology following the malaria treatment was as follows:

November 21, 1923—Blood W.R. negative, Cerebrospinal fluid W.R. 4 plus, Globulin trace, Cells 3, Gold curve 4333210000.
April 16, 1924—Blood W.R. negative, Cerebrospinal fluid W.R. 4 plus, Globulin trace, Cells 3, Gold curve 3333210000.
November 13, 1924—Blood W.R. negative, Cerebrospinal W.R. 1 plus, Globulin trace, Cells 15, Gold curve—normal curve.
March 24, 1925—Blood Wassermann negative, Cerebrospinal fluid W.R. negative, Globulin 1 plus, Cells 6, Gold curve 2333221000.
September 15, 1925—Blood W.R. negative, Cerebrospinal fluid W.R. negative. Globulin negative, Cells 2, Gold curve 1122100000.
March 23, 1926—Blood W.R. negative, Cerebrospinal fluid W.R. negative, Globulin 1 plus, Cells 4, Gold curve 0000111000.

At present the patient is in extremely good physical condition. The neurological examination reveals that the right pupil is irregular and larger than the left. The pupils do not react to either artificial or natural light although there is a tendency of the right pupil to contract. The reaction to accommodation, although sluggish, is present. There are no signs of cranial nerve involvement. The ocular movements are free. There is practically no tremor of the facial muscles in the forced movements. No tremors of the extended fingers. Practically no adiadokokinesis is elicited. The fine movements of the fingers are well performed. The coordination tests are well executed. The muscular power and tonus are normal. The deep reflexes of the arm are slightly increased on the left but are normal on the right. The knee jerks are lively on both sides and equal. Ankle jerks are present and normal on both sides. No Babinski, Oppenheim or Gordon are present. The station and gait are normal. No Romberg. The mental calculations are well performed. There is no spontaneous speech defect at present nor is one detected by test phrases.

From the mental point of view, patient's stream of talk is free, relevant and coherent; he is in good touch with his surroundings; has good insight and judgment although he is inclined to be somewhat childish and emotionally slightly euphoric. No evidence of hallucinations or delusions can be obtained. He is oriented in all fields. His memory is good with the exception that he cannot recall events that transpired at the onset of his illness.

This patient was recently discharged as improved and permitted to return to his home. In his present condition he will undoubtedly be able to earn his livelihood.

Case illustrating parallelism between the clinical and serological improvement following malarial inoculation.

Case II.—T. J. T. Admitted to this institution September, 1920, at the age of forty. The family history was negative for psychopathic determinants. On June 1, 1920, this patient suffered a loss of memory and became very irritable and nervous. It appears that for two years previous to this he had had slight convulsions and speech difficulty and was quite euphoric; at times he would also become confused. On admission here he was quiet and orderly. He gave a history of having contracted gonorrhea and syphilis at the age of sixteen. For the latter disease he received mercurial treatment for a period of two years and he also had one injection of 606. No history of any other acute infections. He is married and his wife had several miscarriages; there are no living children.

Physical condition on admission showed a well built and nourished man. The right pupil was slightly larger than the left; the left reacted very sluggishly to light, more so than the right. There were tremors of the eyelids and of the extended fingers. The tongue was slightly deviated to the right. His coordination was impaired. The triceps, knee jerks and the Achilles reflexes were not elicited. The muscular power was normal. The speech was somewhat hesitating in character.

Mentally his stream of talk was coherent but circumstantial. Emotionally he was euphoric and happy. Insight and judgment were impaired. No hallucinations or delusions were elicited. His memory for both past and recent events was fair. The mental calculations were well performed.

In December, 1922, this patient was given the malaria treatment. He had a total of twenty paroxysms. Serological findings prior to the treatment were as follows:

September 20, 1920—Blood W.R. negative, Cerebrospinal fluid W.R. 4 plus, Globulin 1 plus, Cells 8, Gold curve 5555554530.

February 2, 1921—Blood W.R. negative, Cerebrospinal fluid W.R. 4 plus. Globulin 2 plus, Cells 6, Gold curve 5555310000.

September 28, 1921—Blood W.R. negative, Cerebrospinal fluid W.R. 4 plus, Globulin 1 plus, Cells 12, Gold curve 5543210000.

April 18, 1922—Blood W.R. negative, Cerebrospinal fluid W.R. 4 plus, Globulin negative, Cells 5, Gold curve 5433210000.

November 22, 1922—Blood W.R. negative, Cerebrospinal fluid W.R. 4 plus, Globulin 1 plus, Cells 11, Gold curve 4443210000.

Following malaria treatment the serology was as follows:

June 27, 1923—Blood W.R. negative, Cerebrospinal fluid W.R. 4 plus, Globulin negative, Cells 3, Gold curve 3344310000.

November 9, 1923—Blood W.R. negative, Cerebrospinal fluid W.R. 4 plus, Globulin negative, Cells 4, Gold curve 3333210000.

April 9, 1924—Blood W.R. negative, Cerebrospinal fluid W.R. 3 plus, Globulin negative, Cells 2, Gold curve 4432110000.

TABLE X

Gradual Improvement of the Serology Following the Malaria Treatment

Dates of examination	Blood Wassermann	Cerebrospinal Fluid Wassermann	Globulin	Cells	Colloidal Gold
3-28-23	4444	4444	2 plus	37	55555432100
Malaria treatment					
6 -6-23	4444	4444	3 plus	27	4455552100
8-30-23	4444	4444	00	r.b.c.	4333310000
11-14-23	4444	4440	trace	10	3332100000
4-30-24	0000	4400	plus	10	0012210000
9-25-24	0000	0000	plus	r.b.c.	0122321100
12-15-24	0000	0000	00	6	1122110000
4-28-25	0000	0000	plus	6	1122110000
3- 2-26	0000	0000	00	5	0001200000

TABLE XI

Gradual Improvement of the Serology Following the Malaria Treatment

Dates of examination	Blood Wassermann	Cerebrospinal Fluid Wassermann	Globulin	Cells	Colloidal Gold
12-5-22	4 plus	4 plus	2 plus	42	5554321000
Malaria treatment					
6- 2-23	4 plus	4 plus	3 plus	28	5555544320
7-18-23	2 plus	4 plus	plus	r.b.c.	5555443200
11-14-23	0000	4 plus	plus	6	5544310000
3-25-24	0000	0000	plus	3	2322100000
9-11-24	0000	0000	2 plus	13	3343100000
2-24-25	0000	0000	00	4	001100000
4-21-25	0000	0000	0	1	0012321000
9- 1-25	0000	0000	0	r.b.c.	000110000
3- 9-26	0000	0000	plus	8	0012210000
6- 8-26	0000	0000	plus	3	0012210000

TABLE XII

Relationship Between Temperature and Serological Improvement

Modifications	103 F. Unchanged	103 F. Improved	104 F. Unchanged	104 F. Improved	105 F. Unchanged	105 F. Improved	106 F. Unchanged	106 F. Improved	107 F. Unchanged	107 F. Improved
Number of cases	3	0	0	2	10	13	20	19	5	5

TABLE XIII

Relationship Between Number of Paroxysms and Serological Improvement

Modifications	1-6 Unchanged	1-6 Improved	7-12 Unchanged	7-12 Improved	13-18 Unchanged	13-18 Improved	19-24 Unchanged	19-24 Improved
Number of cases	14	4	11	10	18	26	1	2

No spontaneous speech defect and the test phrases are well repeated.

From the mental point of view, his stream of talk remains rather excessive, but coherent and relevant; he is in good touch with his surroundings; possesses no delusions or hallucinations; memory is good; insight and judgment are good; and he is correctly oriented in all spheres. Emotionally he has become considerably less euphoric. He has had no further convulsions, and he was discharged from the hospital as improved in January, 1925. Since his discharge he has been able to care for himself, and lately he came to the hospital for examination.

Case illustrating the disassociation between the clinical and serological improvement following malarial inoculation.

Case III.—C. P. Aged sixty-seven. Admitted October 21, 1921. Occupation lawyer. Family history negative for psychopathic determinants. This patient was accustomed to the daily use of alcohol. He gave no history of an initial lesion.

Physically, on admission he was emaciated and, neurologically, the examination was almost negative except for exaggerated patellar and Achilles reflexes and a slight tremor of the extended fingers. Pupils were regular and equal and reaction to light was present. Coordination tests were well performed. No adiadokokinesis, no Babinski or Romberg.

August 21, 1924—Blood W.R. negative, Cerebrospinal fluid W. R. negative, Cerebrospinal fluid W.R. negative, Globulin negative, Cells 2, Gold curve 0111000000.

March 2, 1926—Blood W.R. negative, Cerebrospinal fluid W.R. negative, Globulin negative, Cells 2, Gold curve 0111100000.

At present the physical condition of the patient is good. The pupils are regular but slightly unequal, the right being slightly larger than the left. The pupillary reaction to light is sluggish on both sides. The reaction to accommodation is also sluggish. There is a slight tremor of the facial muscles in the forced movements. Ocular movements are free. The tongue is slightly deviated to the right. There is a marked diminution of the auditory power on both sides. There is a slight tremor of the extended fingers. Incoordination of the hands appears only after repeated movements have been performed. The finger to finger and the finger to nose tests are almost normal. The deep reflexes of the right arm are

(To be concluded)

On Stomach Diseases*

JOHN WILLIAM SHUMAN, M.D., F.A.C.P.
Los Angeles, Calif.

This article is on diseases of the alimentary tract. The gastrointestinal tract begins with the mucocutaneous junction of the lips and ends with that of the anus, including the accessory organs. Its diseases are many. Stomach diseases *per se* are few, really only ulcer and cancer. However, the stomach is the "alarm clock" of the human system and "goes off" on the slightest provocation. An offensive sight, story, or odor often causes nausea and vomiting; diseases of brain, heart, kidney, lung, liver, bowels, etc., frequently disturb the stomach through reflex sympathetic nervous action. Therefore much "medicine (drugs, operations, prayers, etc.) is made" for the stomach when it really is not diseased but is only distressed.

Itis (Latin for inflammation) of the mucous membrane of the gastrointestinal tract, may be caused by irritants, for example, trauma, heat, chemicals and foreign bodies, or by infection. The name of the disease depends upon the cause and location, from stomatitis to proctitis; or from syphilitic mucous patches of the soft palate to melanotic sarcoma of the rectum. Commonly overlooked until late stages are spasms, ulcers and malignancies.

Spasm may attack any sphincter muscle from glottis to anus. None are more severe than those of cardiac and pyloric rings. The latter, not unfrequently seen in infants, the former, in fourth and fifth decades of life.

GASTRIC ULCER

Ulcer of the stomach usually gives a fairly accurate history of hunger pain, food ease, sour eructations, heartburn (meaning hyperacidity) hypersecretion (spitting up sour fluid), and periodicity of attacks. These should lead to the diagnosis of ulcer suspect. With occult blood in the stool, suspect the ulcer to be bleeding. Boring pain through to back with rectus rigidity, suspect it to be perforating.

X ray examination of the gastrointestinal tract is absolutely necessary. The barium meal should be watched as it passes through the esophagus into the stomach. The stomach's size, shape, location and mobility should be studied for four or five hours (the usual emptying time).

Ulcer yields findings such as persistent deformities, obstruction of the pylorus, hypermotility and diverticula (if penetrating type, especially on the lesser curvature and in the pyloroduodenal region). With established cancer there is hypomotility; and if obstructing—a six hour or longer residue of the barium in the stomach. Ulcers and cancer with craters may retain particles of the barium hours after the opaque meal has passed on. Unfortunately the only one hundred per cent. proof of ulcer is recognition at autopsy. Ulcer often escapes the surgeon's recognition at operation.

All ulcers should be first treated medically, i. e., by the nonirritation form of treatment. If all symptoms disappear the régime should be maintained for two or three years before stopping treatment. Gastric ulcer is frequently found in the patient who has focal infection of teeth, tonsils, sinuses, chronic cholecystitis and appendicitis. Also pulmonary tuberculosis and syphilis.

Perforation of an ulcer demands immediate operation as a life saving procedure. Gastric hemorrhage is not an indication for immediate operation. Periogastric adhesions often are. Ulcer that is not healed by medical management should be operated for.

ILEOCOLITIS

Ileocolitis is common to all ages. The causes are many. It may be acute or chronic. Amœba histolytica, hyperthyroidism and diverticula of colon, may be mentioned as a few of the causes. The acute type usually rights itself. The chronic needs specific treatment and is difficult to manage. By specific treatment is meant the removal of the cause, for example, hyperthyroidism, amœba, or arresting the tuberculous process.

The numerous diseases of the rectum often go unrecognized, because the physician fails to do a rectal examination with the eye and finger. A proctoscopic examination is not difficult. Hemorrhoids are often a result of liver disease (portal stasis) and this type should not be surgically removed, for they will return. Many diagnoses are made of cancer of the sigmoid when only chronic inflammation of diverticula exist, and vice versa. Chronic inflammation may become malignant.

OBSTRUCTION

Intestinal obstruction may be due to foreign bodies, intestinal parasites, feces, tumors inside or outside of the bowel; it may be due to adhesions and twists, in fact anything which interferes with the onward movement of intestinal contents. The higher up the intestine is obstructed and the nearer complete it is, the quicker will be death unless relieved by operative intervention.

Position of the hollow viscera makes little difference in function providing other things are equal—this in speaking of gastric and colonic ptosis.

APPENDICITIS

Appendicitis needs but passing mention here. Once diseased the appendix should be removed. Too many diagnoses of appendicitis are made and operations for the same done, when a gastric ulcer, inflamed gallbladder or renal stone is the cause of the patient's complaint. The reason is apparent. The examiner was not thorough enough, and was too willing to operate. Follow your patients to operation and check up your clinical findings with those found at the operation. Too often the surgeon handicaps himself with too small an abdominal incision, so that he can neither show the onlooker the pathology, nor make a comprehensive intraabdominal examination.

The following illustrative case was shown by Dr. G. W. Harmon, an intern at the hospital:

*Fourth of six clinics held for seniors at the College of Medical Evangelists, Los Angeles, April 8, 1926.

Case.—The patient, male (No. 242313), aged sixty-three, was admitted March 31, 1926, complaining of upper belly pain and distress of eight weeks' duration, not relieved by meals but occasionally by soda; constipation of four months' duration; weakness for four weeks previously; had lost sixty pounds in the four months; blood in stools (tarry) once or twice; occasional vomiting and nausea.

The patient was a pale, emaciated man, with carious teeth, who looked very ill. A hard tumor was found in the epigastrium from the midline to the right midclavicular line down to the umbilicus; size three and a half by three and a half inches. It was tender and slightly rough. The patient's blood pressure was 86/65.

Laboratory findings: Hemoglobin 50 per cent.; red blood cells, 2,340,000; white blood cells, 18,800, the latter possibly due to an abscess on the buttock; icteric index, 20. Stomach: Free HCL-10, total 22; no organisms, no lactic acid, no retention and no blood. X ray findings by Dr. Carter: Possible tumor in region of pancreas.

The patient refused exploratory operation, I think wisely, for he was not only a poor surgical risk but little could be done. He has little obstructive signs and symptoms at present. His loss of weight is secondary to toxemia rather than starvation. The diagnosis was carcinoma of the liver, secondary; primary lesion not determined.

2007 Wilshire Boulevard.

Pulmonary Abscess*

An Analysis of Eighteen Cases, with a Report of One, Following Tonsillectomy, with Spontaneous Rupture and Evacuation

M. SCHWARTZ, M.D.
Philadelphia

Case I, No. 37686.—M. B., aged sixteen, a schoolboy, came to the diagnostic clinic on August 10, 1925, complaining of pain in the right hydrochondrium and lower right chest, fever and weakness. His father died as the result of an accident, his mother suffers from chronic bronchitis and asthma, and one brother had been in a sanatorium for pulmonary tuberculosis. His family history was otherwise unimportant.

The patient had measles when six years of age. Six years ago he had an operation on his kneecap following an accident. Otherwise he had always been well. Three months ago I examined him, at the Eagleville Hospital, at the behest of a social agency. At that time he was pale, underweight, and had diseased tonsils and adenoids. His lungs were entirely negative, except that there was an occasional subcrepitant râle in the left apex, which was considered of no significance. Otherwise he was entirely normal. A nose and throat examination showed hypertropied and diseased tonsils, and a septum badly deflected to the left, interfering with respiration. Accordingly, two weeks ago a tonsillectomy under local anesthesia was done.

His present illness began three days ago. While sitting quietly on his doorstep he was seized with a sudden, severe pain in the right hypochondrium, which doubled him up. This was followed by chills, fever, and sweating. The pain in the right upper abdomen continued, and also involved, very slightly, the right lower chest. It did not radiate, but was made worse by motion, deep breathing, or cough. He was mildly nauseated, but did not vomit. There was anorexia, the bowels were normal and there were no symptoms referable to the gastrointestinal tract. There was no headache, but malaise was marked. There were no symptoms referable to the genitourinary, cardiovascular, or nervous systems.

The patient was a tall, thin dark boy of sixteen, with a temperature of 102°, pulse 96, respiration 30. The pupils were equal and reacted normally; there was a slight icteric tinge to the sclera. The tongue was moist and heavily coated, the pharynx congested. The neck was negative, no pulsations, no adenopathy. The chest was long, thin, and the anteroposterior diameter narrow. There were slight depressions of both supraclavicular and infraclavicular fossæ. The right lung, particularly at the base, showed diminished expansion. Tactile fremitus was absent in the right lung, from the sixth interspace down to the costal margin. Over the same area, percussion elicited a dull note, auscultation revealed an absence of respiratory sounds, and there was no transmission of voice sounds. No râles were heard, except an occasional friction rub at the level of the sixth spinous process posterially. There were some crepitant râles at both apices, more marked over the right. The rest of the lung presented no abnormalities.

Examination of the heart: the apex was somewhat diffuse; it was felt and heard in the fifth interspace slightly outside the midclavicular line. The sounds were somewhat weak, no murmurs. Sinus arrhythmia was present. Blood pressure, systolic 115, diastolic 50. The abdomen was negative and the reflexes were normal.

Though fully cognizant of the possibility of pulmonary abscess following tonsillectomy, we felt that, in view of the family history and the apparent signs of thickened pleura, we were justified in making a tentative diagnosis of rightsided pleuritis, probably tuberculous in origin. We recommended admission to the hospital for careful study. Accordingly on August 12, 1925, the patient was admitted to the medical ward in the service of Dr. A. I. Rubenstone.

In the ward, the physical signs were found to be about the same. At this time the urine contained a trace of albumin, otherwise negative. Examination of the blood on August 13th showed hemoglobin 85

*From the medical clinics Mt. Sinai Hospital, Philadelphia. Read before the Mt. Sinai Hospital Clinical Society, October 15, 1925.

per cent.; red blood corpuscles 4,000,000, white corpuscles 19,200, differential count, polymorphonuclears 89 per cent.; small lymphocytes 10 per cent.; large lymphocytes 1 per cent. On August 21st the examination showed white corpuscles 19,300; polymorphonuclears 86 per cent.; small lymphocytes 14 per cent.; large lymphocytes 1 per cent. On August 25th the white blood corpuscles numbered 28,000, polymorphonuclears 87 per cent.; small lymphocytes 11 per cent.; large lymphocytes 1 per cent., and eosinophiles 1 per cent.

The sputum was examined a number of times. It was scant and contained some mononuclears, epithelial cell, staphylococci, and pneumococci. It was persistently negative for tubercle bacilli and spirochetes. The blood culture was negative. An x ray study done two days after admission showed thickening of the pleura at the right base. There was no evidence of effusion. There was an enlarged node in the right hilus, and some peribronchial thickening in the right base. The heart was enlarged in the transverse diameter. The paranasal sinuses were negative. The temperature was septic in type, varying from 102° to 103° F. in the evening to 99° or 100° F. in the morning.

At this juncture the suspicion of tuberculosis was abandoned, and an acute septic process, such as pulmonary abscess or interlobar empyema, was considered. It is worthy of note that most of the time the patient lay comfortably in bed, complained only mildly of pain in the right lower chest, coughed only occasionally, and expectorated very scantily.

On August 25th the breath sounds below the angle of the right scapula were slightly more distinct, but at the base breath sounds were entirely absent, there seemed to be more localization than heretofore. An x ray study on August 26th elicited the following report: "There is a marked change in the pathology of the right base. Pleurisy is still present. In addition, there is a large area of consolidation involving an area about two inches in diameter, extending from the eighth interspace downward. The upper border is sharply demarcated from the surrounding lung. Early abscess formation must be considered as a possibility, although there is no evidence of breaking down in this area as yet."

On August 28th, the following note appears in the chart: "The process in the lung shows more signs of liquefaction than pleurisy. Since last night, the patient has been bringing up quantities of greenish grey sputum, probably due to rupture of an abscess within a bronchus." A bronchoscopic opinion was then sought, but Dr. Tucker felt that in view of the pleural involvement nothing should be done, as yet. He advised waiting until the process localized itself and the pleura cleared up.

The patient continued to cough and expectorate rather profusely for the following two or three days. It was remarkable that after this the temperature subsided to normal and remained so until his discharge from the hospital. An x ray taken a few days before final discharge showed a decided improvement in the pathological process in the right base. The physical examination just before discharge still revealed evidence of thickened pleura and the breath sounds were distinct. He gained in weight and strength and was discharged improved on August 24th.

The question arises: What did take place in this boy's chest? Are we to believe he had a pleuritis with a secondary pneumonities which finally underwent resolution, or, are we to suppose this to have been a case of pulmonary abscess? The history of a tonsillectomy two weeks previously, the sharply demarcated area of consolidation, the sudden coughing, and the expectoration of mucopurulent material make the latter diagnosis more attractive.

A review of eighteen cases of pulmonary abscess diagnosed and treated at the Mt. Sinai Hospital since 1916 shows that four cases followed tonsillectomy, five followed pneumonia, one followed an operation for cholelithiasis, one followed the inspiration of a tooth, and for seven no cause could be ascertained. It is interesting to note that the number of cases seems to be increasing, there being six cases in 1924 and four during 1925, whereas in preceding years back to 1916 there were only one or two cases reported each year.

The distribution as to the lobes involved is as follows: left upper lobe, three cases; left lower lobe, two cases; right upper lobe, four cases; right middle lobe, four cases; right lower lobe, three cases. In one case there were multiple cavities, two abscesses in the left upper lobe and one in the right middle lobe, and in one case there were abscesses in both left lobes and in the right upper lobe. From this it will be seen that in thirteen cases there was involvement of the right lung, while in only seven cases was there involvement of the left lung. As to sex, twelve patients, or sixty-six and two thirds per cent., were males; six patients, or thirty-three and one third per cent., were females. The age incidence was as follows: in the first decade, two cases; in the second decade, three cases; in the third decade, three cases; in the fourth decade, four cases; in the fifth decade, four cases; in the sixth decade, one case; and in the seventh decade, one case. As to the results, nine patients were cured, or definitely improved, and five died, which makes a mortality of thirty-six per cent. This coincides very closely with the experiences of other institutions.

As to the *modus operandi* of pulmonary abscess when it follows tonsillectomy, Fisher and Cohen (1) believe abscesses following tonsillectomy are due to infective emboli carried to the lung by means of the lymphatic or vascular circulation. Paul W. Ascher (2), who has done valuable work along this line at the Mt. Sinai Hospital in New York, says: "Infective agents may enter the lung first, through the air passages, second, through the blood stream by way of the venacavæ and right heart (emboli); third, by direct extension from neighboring structures, and fourth, by traumatic introduction through the thoracic cavities." He says further that "the presence of the epithelial lining and the gross pathology indicate without doubt that the usual posttonsillectomy lung infection begins as a localized lesion in the bronchus." For the production of a localized lesion we must assume the aspiration of a piece of infected tissue or blood clot. That the septic embolic lesion may occur cannot be denied. Willy Meyer (3), Glowacki (4), Chipman (5), Prenn (6), and Moore (7), all concur in the belief that aspiration of infected material is the most likely cause of lung abscess when following operations in the nasopharynx. This is further borne out by the fact that the symptoms of abscess usually

come on about the second or third week following operation. For it is logical to suppose, if the cause was due to embolic infection, the symptoms would come on within a day or two.

Lambert and Miller (8) studied ten cases of lung abscess bacteriologically. They found anaerobic bacteria such as spirochetes, predominating in eight cases, while two cases had streptococci. Of the cases studied at the Mt. Sinai Hospital, the sputum or the pus obtained contained streptococci, pneumococci, or micrococcus catarrhalis.

It is generally agreed that the right lung is more frequently involved than the left. For as Chipman (5) says: "The right lung is involved more than the left because the right lung is larger. The bronchus is larger and straighter than the left, so that the entrance of infected material is more direct and easier than the left." In an analysis of 202 cases of pulmonary abscess following operative work on the upper respiratory passages, W. F. Moore (7) found involvement of the lower lobes of the lungs in sixty per cent. of the cases, right lobes forty-one per cent., and left lobes nineteen per cent. This is also in accord with our findings.

Once an abscess has become established, it may terminate in three ways: first, it frequently ruptures into a bronchus and thereby drains; second, it may become chronic; third, it may rupture into the pleura and cause empyema. An interesting case in our series which was treated by H. B. Shmookler, was that of a man, M. F., aged forty-eight, who had an abscess of the right lung which bored through the vertebræ, involved the spinal cord, and caused a very interesting array of symptoms.

It is the consensus of opinion that medical treatment usually gives the best results, and should always be instituted first. When a careful, patient medical regimen has been carried out and still fails, then surgical intervention should be sought.

Under medical treatment I include bronchoscopic aspiration, which has accomplished wonders in some of these cases. Vaccine treatment may be tried along with the bronchoscope. Of course, rest, high caloric diet, supportive medication, and postural treatment should be used.

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Sex Hygiene of the New Zealand Maori

ETTIE A. ROUT
London

From time to time American medical investigators come to Europe studying various aspects of the sex problem, but none of the investigators who have called on me seem to have any adequate knowledge of the sex hygiene of the native races. What natives believe and do after they have been corrupted by modern European civilization is of no consequence: they are often bad copies of ourselves. But what they believe and do before we have destroyed their religion and broken down their customs is of immense importance to the entire civilized world, if only for the reason that natives do not suffer from the diseases of civilization—particularly syphilis.

The absence of syphilis will be denied promptly, by those who hold that Columbus's sailors first brought this disease to Europe, having contracted it themselves from American Indians. As a lay observer, and speaking without any claim to medical qualifications as a syphilologist, I do not feel that the possibility of Columbus's sailors first infecting the American Indians with attenuated forms of the spirochetes, and the Amerinds later reinfecting the sailors more virulently, has been eliminated. That, however, is not the only possible explanation.

The New Zealand Maori are said to have left Assyria some five or six thousand years ago. They journeyed first to Egypt, then across Europe to Portugal, and from there to Ancient Mexico; with the Fall of Mexico to have departed for Titicaca (Peru) via Central America (Maya); and later to have left Peru for the West, ultimately landing in New Zealand, with Easter Island as the first long halt. Thus it may be that the Amerinds themselves carried attenuated forms of the spirochete, and lit up the more virulent infection in the European sailors. But this is quite different from saying that the spirochete is America's gift to the whole world.

The truth regarding the origin and spread of syphilis still needs to be garnered and sifted. We do not yet know all there is to be known. But we do know already that yaws exists among many of the dark-white peoples (the brown race) all over the world, and it is the Stone Age dark-whites who were the earliest world migrants.

The New Zealand Maori belong to this race, and among them the most elaborate precautions were taken to prevent the spread of what they called skin disease, and it is notable that their name for Europeans is *pakeha-pa* meaning people (or village or nation), and *keha* meaning diseased, insanitary, scrofulous, syphilitic, etc.: a reference to the spreading of these diseases under European civilization and demoralization. Under Ancient Maori culture such diseases could not spread. The native dances largely prevented this. These dances were really health parades, done in the nude. It was the custom for visitors to deposit all their clothing on the threshold, and join in a dance of welcome from the village folk—who were also naked. If any member of either party were sick or diseased this would be apparent immediately. The visitors would refuse to come in contact with such folk, as a duty they owed to themselves and to the community; and the village folk would refuse to entertain neighbors whose health was obviously unsound. This mutual exclusion was seldom put into effect; the knowledge that it would

be was usually sufficient to keep persons not well from mingling with those in good health.

When visitors came from a distance, and were found to be sick, they were taken into the village, but quarantined in special buildings, which were afterwards fumigated or burnt down, and the visitors' clothing was destroyed and fresh supplies were given them as a free gift. Needless to say, any men or women showing signs of disease were not allowed to have sexual intercourse. No Maori woman would permit a man sexual access unless she knew he was sound in health, and no Maori man would endanger his health with a sick woman. Community life and the absence of clothing (excepting loin cloths as a sign of wedlock) made the necessity of such precautions widely known and enabled these precautions to be readily applied.

When the Maori reached the age of betrothal and marriage, these were public ceremonies, the important nature of which was understood from the teaching given from childhood in the Winter Schools. There the native doctors and noblewomen instructed the boys and girls in the principles of health and race culture, and the system of bodily cultivation (the native dance) was a continuous form of physical education begun in early childhood and continued whilst there was life—at any rate, movement.

Betrothal took place usually at about the age of fifteen, and it was a trial marriage, which usually lasted about eight or ten years. During that time the young couple lived together in the homes of either family, nominally as brother and sister, but actually as lovers. They were not allowed to have intercourse till both parties had been medically examined, and found in perfect health, and the first sexual union was a public ceremony—a sacred act calling for the highest love and reverence. Instructions were given to the youth privately, and demonstrations of posture were explained to them. The maiden could attend these, or she was permitted to obtain the information from her lover.

The eight or ten years of betrothal were infertile, and if the couple were satisfied with one another, they were later publicly married, provided they were passed as fit for parenthood. Only the highest and fittest men were permitted to become fathers: no Maori woman would allow herself to be impregnated by a second rate man. She might be in love with such a man, and live with him as his wife, but she selected only the highest type of man as the father of her child. Her husband would still consider himself fortunate because she continued to love him, and he honored his wife for fulfilling her sacred duty of race improvement. The children were regarded as the treasures of the community. It was seldom that a man had more than one wife, but if he did both wives were regarded as the mothers of all the children, even though one might have had no children.

In Maori life there was no such thing as prostitution or loveless relationship. Adultery was regarded as loveless intercourse, inside or outside marriage, and highly reprobated as injurious to race culture. Few women were denied the privilege of motherhood granted by the community, but only the best men were accorded the honor of parenthood. In the matter of race improvement, the Maori scientists taught that the father was of much more importance than the mother.

Mutual sexual happiness and mutual satisfaction were taught as essential to married life. The young man was told that it was his duty to make sure that his wife had her orgasm. If he ejaculated before this occurred, he was taught that he should allow the woman to assume the superior position till she reached her climax. Not mutilation of the genitalia but cultivation of the pelvic musculature was the way to ensure marital efficiency and mutual satisfaction. The native dances gave the necessary bodily cultivation (I have detailed these women's exericses in my book, *Sex and Exercise*—Heinemann),[1] and the teaching in the Sacred Legends gave the necessary knowledge. But before marriage and parenthood, sex experience was a sacred duty for all Maori men and women. The betrothal gave the opportunity for this, but if the couple were unsuited it was their duty to select other partners more helpful in securing personal happiness and race improvement.

In regard to the control of fertility, some of the native teaching I have set out in *Safe Marriage* (Heinemann) and some in *The Morality of Birth Control* (John Lane), and a little more has been noted in *Maori Symbolism*;[2] but the whole problem requires detailed investigation. South America, perhaps Mexico, and parts of Polynesia are still the best places in which to study the native sex hygiene of the westward stream of dark-white migrants. Among these, I believe, it will be found that circumcision was practised only when necessary temporarily to curb youthful sexuality. The hymen was removed at birth usually—certainly before the love-betrothal. Certain leaves, herbs, roots and nuts were believed to induce temporary sterility if thoroughly chewed by the men and the women at stated intervals. Possibly this is one reason why there is so much chewing of the betel nut (Arica) in various parts of the world. The leaves of the shore convolvulus are also used. Whether these produce temporary sterility or early miscarriage, we do not yet know. Abortion was condemned by the ancient Maori and preventive methods advocated. These preventive methods possibly included certain body-dances done by women not desiring pregnancy. The rectum and vagina were habitually washed out by suction and expulsion of water, sometimes from calabashes shaped like our rubber "sprays." Tampons of moss and seaweed and other substances were sometimes employed. When malposition of the uterus was produced (to prevent further reproduction) this operation was performed at childbirth, but it was done only when permanent sterility was desired. Birth control precautions and all matters connected with marital efficiency, maternity, and sex-life generally were discussed at the mothers' meetings held during the periodical seasonal ceremonies.

These are some of the ethical and hygienic principles which we may learn from natives, once we assume the right attitude of mind towards our fellowmen.

[1] William Wood & Co., New York.
[2] Kegan Paul, London, and Harcourt Brace & Co., New York.

The Principles in the Treatment of Cancer*

RICHARD J. BEHAN, M.D.
Pittsburgh, Pa.

(*Concluded from page* 547)

In a somewhat similar way, Neuberg and others used agents such as cobalt, silver, copper, platinum, gold, tin. They thought that these substances produced a contraction of the bloodvessels and that (since there are no bloodvessels in the tumor) the tissue spaces in the tumor would become dilated because of the increased vascular pressure and proportionately more of the injected substances would enter and remain in the tumor than in other areas of the body. The injected substances would then act directly upon the unstable tumor cells and destroy them before the circulation was again restored to normal. No tumor has so far been cured in animals by this means, probably due to the fact that tumors in animals are sursounded by protective walls, usually of leucocytes or lymphocytes, and it is difficult for the injected materials to penetrate into the tumor itself. This protective wall does not exist to such a degree in man, where the tumor progresses more by infiltration. Opitz has been studying very systematically the effects of drugs upon cancer. Among the substances he has tested are iodine preparations. After considerable study, he evolved a combination which he calls No. 67. This contains glandular extracts, dyes, chemicals, etc., the exact composition of which at present is not published.

VACCINES AND EXTRACTS

It has been found that animals usually do not have multiple carcinoma. It has also been found that in mice in which a spontaneous tumor of the breast is present, irritation cancer can, with difficulty and in but very few instances, be produced. It is claimed by some that it cannot be produced at all. The presence of a primary cancer in man apparently acts as a hindrance to the development of another primary cancer, because it is extremely rare to find cancer of the same type in two different locations in the human body unless one follows the other and is of metastatic origin. This restriction does not, however, apply to the skin for multiple epitheliomata apparently are frequently present. Therefore, cancer apparently causes a protective substance to be formed in the organism. This immunizing or protective substance persists even when the primary tumor is removed. It is of variable duration. It seems that it is the breaking down of this immunity that permits the underlying causative tendency to reassert itself so that new formations of cancer tissue again occur. The socalled recurrence in the primary carcinoma area as the breast or in the operative incisional scars following cancer operative removal, may be due, not to oversight of the surgeon in leaving cancer cells in the tissue, but to the reestablishment in the organism of a lessened resistance to localized tissue overgrowth.

Llambias and Gretto-Brian found that inoculation of an animal that had been previously injected with a filtrate of chicken sarcoma will, on implantation of the chicken sarcoma, give only an attenuated growth. If another animal is injected with the same tumor filtrate and then is innoculated with the attenuated growth of the first animal, it may or may not produce a growth in the second animal. However, if a third animal which has been treated with the injection of the same tumor filtrate is inoculated with the attenuated growth of the second animal, there is always a negative result, showing that by injection of the tumor filtrate a direct action upon the transmissible principle which causes the development of the tumor is produced. As chicken sarcoma is practically one hundred per cent. inoculable, the above experiments indicate that there has been developed a positive deterrent action against the activity of the tumor cells.

Further, Woglom, in discussing tumors which spontaneously retrogress, says, "the cells of a tumor that is to recede are destroyed first at the periphery by a lethal agent or condition which gradually permeates the neoplasm and that the dead cells in its wake are soon replaced by a secondary fibrosis." He further states that "no clue respecting its nature has as yet been discovered; certainly there exists no evidence that it resembles any of the known antibodies." Because of the fact that the retrogressive change first occurs beneath the capsule and even adjacent to capillary vessels, it would indicate that the immunizing principle is in some way connected with the connective tissue and is not free in the blood stream.

It has been thought that active immunity may be produced against human cancer after its removal by the implantation of cancer tissue which has been rendered inoculable by lethal doses of x ray. This I have discussed earlier in my paper.

It has also been found that innoculation of mice with various normal tissue cells produces variable immunity. Living cells injected into the circulation of an animal were slowly eliminated; but on second injection into the same animal, they were rapidly eliminated. The first injection sensitized the animal and on the second injection destruction of the cells occurred. It is also of particular moment that cells which act as sensitizers need not be of the same type as that of the tumor against which they are directed.

Applying these facts, Keyser injects dead cancer cells made into an emulsion which he calls a vaccine after cancer has been removed by operation or other means. These cells are foreign proteids and may in some way stir up a sensitization of the animal against the cells of a tumor which, the conditions being favorable, would otherwise develop. He finds these vaccines are of some value in conjunction with other methods of treatment. For the purpose of producing protoplasmic immunity, he makes extracts of cancer cells and injects them into the organism. These are active remedial measures against cancer tissue itself. It is possible that they may act as sen-

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sitizers, rather as activators, so that the normal cells of the body may be stimulated to the production of an antibody?

We have been experimenting with both vaccine and extracts at the Pittsburgh Skin and Cancer Foundation. So far, the vaccines have been useless, but we believe that possibly some success has attended the use of extracts. I use the term "possibly" because it is very difficult to evaluate the effect of treatment since there is no definite rate of growth of tumor tissue and no standard comparison upon which to formulate an opinion.

From time to time organisms supposed to cause cancer have been defined and isolated: I refer to the bacilli of Glover, of Young, of Blumenthal, of Nuzum and of Gye. That such bacilli occur is a source of controversy; these I have discussed earlier in my paper. Antisera have been produced and their sponsors claim some curative results from their use. Up to the present, none seems to have any definite curative influence. Vollmer found that protein injection caused a change in metabolism, an initial acid phase giving rise to an alkaline phase; small amounts seem to stimulate; large amounts to paralyze. It is also possible, as stated by Weichardt (14), that "the broken down products of the proteins are immediately taken up by the cellular elements of the body and that the latter immediately react with increasing efficiency of all functions."

T. Lumdsen (15) produced an antiserum which when injected repeatedly into and around a sarcoma on a rat's leg with temporary restriction of the blood supply, caused the tumor to disappear. The rat was now immune and subsequent inoculations of the same type of tumor did not take. If there were two tumors, one on each foot and the one was removed by constriction of the blood supply and the injection of antiserum, the tumor on the other foot disappeared. Lumsden thinks that the products absorbed from the attenuated or dying cells evoked an active immunity in the host. Note the associated constriction of the circulation which corresponds to the conditions present when we restrict the circulation by arterial ligation.

Where there is a marked anemia with a leucopenia, it is advisable before beginning treatment to get the patient into as good physical condition as is possible. For this purpose blood transfusion is frequently indicated. Should the case be far advanced, palliative means are then instituted. Morphine and other pain relieving drugs are to be given. X ray in some instances may relieve the pain.

Coincident diseases: 1. Tuberculosis was found in twenty-two cases of 180 consecutive autopsies on cancer patients; it nearly always was found in the primary lesion. White thinks that in most cases the tuberculosis was secondary to the cancer (White).

2. Syphilis: When syphilis occurs in association with cancer, as it frequently does in cancer of the tongue, it is held to be very dangerous to force the arsenicals and mercury.

Measures should be undertaken by surgical or other means to correct the sequelæ, such as deformity or increased sensibility or loss of motor function, the sensory and motor changes which are due either to lessened circulation or to pressure upon the nerves, resulting from injury either at the time of operation or as a consequence of the contraction of postoperative scar tissue.

When because of extensive involvement, it is necessary to destroy the nerve supply to a muscle, function may be reinduced in the muscle as in the orbicularis oris, by suturing into the affected muscle a pedunculated graft of the temporal or the masseter muscle; this is the method of Gersuny, proposed in 1906, proved experimentally by Erlacher in 1914.

The best means available to relieve the painful reactions, especially in the hand as occurs after complete dissection of the axilla and infraclavicular areas, is diathermia. It is of great value. Injection of alcohol into the Gasserian ganglion or one of its branches is used to relieve the pain in tumors of the face or mouth. Injection of the cervical roots has also been done in cancer of the neck.

Deformities should be treated by the proper corrective measures.

I wish to call your attention to certain facts that we should always remember, especially if our enthusiasm or the urging of a clamoring patient should tend to lead us astray, namely, that the cure, i. e., the retrogressive process of a cancer cannot be forced; and, if the attempt to do so is made, a stormy and possibly dangerous reaction may occur, with, in some cases, fatal results. Opitz states that in two instances in man and frequently in animals he has observed death intervene during the rapid retrogression of a carcinoma.

It is also necessary that periods of freedom from treatment be given irrespective of the type of treatment, in order that the organism may develop either a resistance to the poisonous products of disintegration of the tumor, or a means of destroying or extruding them.

I would also add a word of warning to the indiscriminate, uncontrolled use of radium and of x ray. I believe in many cases, irremediable harm has been done by the ill advised and pernicious interference by those of insufficient experience. The cancer patient is in a class all by himself and demands the best assistance that is available. We should not limit ourselves to any one means of treatment, nor should we direct our efforts only to the growth and its destruction but that we should devote more attention to the host—for after all, it depends upon the general reactions of the patient whether recovery or death results.

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Practical Therapeutics

Intravenous Therapy*

JOHN HOWARD FRICK, M.D.

Philadelphia, Pa.

Since Lugol's solution was first introduced in the treatment of diseases of the thyroid gland discussion has been both pro and con as to its efficacy. In some clinics where iodides were employed it was found to be of use only in the simple hypertrophic and exophthalmic varieties. Some clinicians employ the tincture of iodine in doses up to a dram t.i.d. in toxic adenomas with beneficent results. In other clinics it was found that the employment of iodides in any form resulted in an apparent onset of crisis with all of its terrifying phenomena. It was this unusual result and peculiar iodide action that first called our attention to what we believe is a method of determining the difference between ordinary exophthalmic and the toxic goitre. If our surmise is true we may have in our possession a method by which we can definitely tell, just as in the Goetch test, when a goitre is becoming toxic and endangering the patient's vital organs. This will be of great help clinically in order definitely to determine the treatment best suited in each particular case. In order to make the test accurate it is necessary for us to employ the particular concentration of sodium iodide that has been determined, both experimentally and clinically, as being the proper concentration for use in the blood stream, namely, one gram for every 45.3 kilos body weight, said one gram held in 10 c.c. sterile water. Suppose we have a case of enlarged thyroid of some years' standing and we wish to determine the toxic factor. With the proper intravenous injections of sodium iodide with hourly records of pulse and blood pressure this is accomplished. If in the toxic stage or approaching a crisis there will be an increase in pulse rate, a primary rise and a secondary fall in blood pressure which will not return to normal until after the expiration of the twenty-four hour period. It is apparently possible by this method to determine and establish the point at which the exophthalmic goitre goes over into a toxic type. In two cases we have been able to influence the metabolic rate by this method of treatment, both having a reduction of from forty to fifty per cent. in the metabolic rate after the intravenous employment of sodium iodide. The report of Jackson (5) states that the use of iodine prevents or terminates the fatal crisis in exophthalmic goitre and further states that the nervous, renal and digestive systems are favorably influenced and there is an average reduction of plus nineteen per cent. in the basal metabolic rate.

Up to the present there has been no method by which one could determine when an exophthalmic goitre became toxic. With the employment of this method where we get direct reaction to the iodide molecule we are reasonably safe in assuming that the element of toxicity exists and can be guided accordingly. In a few cases where there was a profound reaction to the intravenous injection of the sodium iodide marked by the increase in the pulse rate and a decided fall in blood pressure, on again repeating the treatment after the third or fourth day this did not occur to the same degree and after the third or fourth injection there was no longer any reaction and the metabolic rate very much lowered. Thus we are led to feel that sodium iodide employed in this manner constitutes not only a test of the toxicity of a patient but provides a method of detoxifying. This is referred to by Jackson in his work on goitre.

Sodium iodide is apparently of value in the controlling of hypertension. In a series of fourteen cases of high blood pressure that have been studied over a period of two years the administration of one half the normal amount of sodium iodide at weekly intervals has brought about a reduction in blood pressure of about twenty per cent., this without any other form of medication, the essential being regularity of treatment over a long period of time, usually about six months.

Some few of these cases have had the usual complications, cardiac, renal, hepatic, all of which seem to be benefited by treatment. In a similar series of ten cases of hypertension in which sodium iodide and potassium iodide were given orally no such results were attainable at the end of a similar period and besides the patients invariably complained of gastric discomfort incident to the iodide effect.

Calcium chloride has been repeatedly employed in the control and treatment of pulmonary hemorrhage, to lower the coagulation time of the blood, to control or prevent postoperative tetany in thyroidectomy, in the control of night sweats of tuberculosis, and in the control and treatment of tuberculous enteritis. It is important that we realize that calcium chloride is inefficient and inactive when given orally, this having been definitely proved by Hastings and MacIntosh (1). These investigators have shown conclusively that the oral administration if continued will produce a severe acidosis whereas the intravenous administration, even over a long period of time, shows no untoward effect. Repeated examinations of the blood after the injection of the calcium show its entire absence after six hours while there is no increase in the daily excretion of the calcium in either urine or feces for six days after the injection, thus proving conclusively that the calcium is put to some use or enters into some combination in the body.

The dose that has been found most appropriate, namely ten c. c. of five per cent. solution, is under ordinary conditions devoid of any reaction and is practically safe to employ in this concentration. The patient complains of a burning sensation usually in the tongue and then over the entire body. In two cases of tetany in which calcium chloride was given orally along with parathyroid extract, as has often

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been advocated, there was a control of the contractures or recurrence of the tetany. After ten days of treatment by the oral method it was decided to give the calcium chloride intravenously with almost immediate cessation of the symptoms and after six or eight daily injections there was no return of the condition.

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The Treatment of Hepatic Venous Cirrhosis

CHARLES GREENE CUMSTON, M.D.
Geneva, Switzerland

The curable types of the pathological process under consideration are above all the hypotrophic forms, in which the compensating hypertrophy decreases the syndrome of hepatic insufficiency and portal hypertension. In atrophic cirrhosis—still designated as Laennec's type—we cannot at present affirm that curable forms of hepatic sclerosis exist, but it can be asserted that the cirrhotic process can be controlled if hepatic insufficiency be detected at its very onset.

The clinical evidences of hepatic insufficiency are the first to appear in venous cirrhosis, hence great advantage is to be derived from their early detection. The symptomatology of minor hepatic insufficiency comprises numerous little signs, often not apparent, such as trifling digestive disturbances, apt to be regarded as common dyspepsia or else accounted for by an alcoholic gastritis, because patients subject to this morbid process are very often—although not invariably—large users of alcohol in its various forms. The patient's general health is reacted upon, the symptoms being an unaccustomed apathy, somnolence and fatigue. There is an early tendency to hemorrhage—epistaxis especially—and the development of hemorroids and purpuric elements in the skin.

Minor hepatic insufficiency is quite compatible with a fairly good state of health and not infrequently is detected by the urinary syndrome. Oliguria and analysis of the urine will show the presence of hypoazoturia, indican, urobilin and occasionally bile pigment and salts, due to dysfunctioning of the hepatic cell. Although far from reliable, resort to the test of alimentary glucosuria, experimental ammonuria, the coefficient of acidosis and nitrogen is advisable and may give results.

One of the best means of dealing with hepatic insufficiency is hepatic opotherapy, as it stimulates the biliary functions, increases the ureopoietic function, increases the anticoagulating and antitoxic functions of the liver, likewise its glycogenic function, and induces diuresis. Injectable gland extracts are approved by many given either subcutaneously or in the muscles. In urgent cases the intravenous route may be selected. The aqueous extracts are preferable, but the preparation must be freshly made and discarded after two weeks time.

Vallaret is of the opinion that lipoid extracts have an injurious action on the hepatic parenchyma and I am of the same opinion.

The exhibition of gland extracts by mouth is, we have found, quite reliable in so far as the therapeutic action is concerned, but only when the digestive functions are not involved, otherwise their absorption will not take place. The two methods may be combined, an injection being given on one day, and powdered liver, the various extracts in cachets or pills on the following day, and so on. Fresh finely hashed pig's liver—from 100 to 200 grams, macerated in vegetable soup and the filtrate drunk—is not to be despised. Hepatic opotherapy may be combined with pluriglandular treatment which enhances the effect of the former, in the form of extracts of bile, pancreatic and intestinal juices. Even when long continued hepatic opotherapy rarely gives rise to intolerance other than diarrhea which is not common.

The action of the gland extracts may be reinforced by the exhibition of boldo in the form of fluid extract or tincture or infusion of the leaves on account of its powerful tonic and diuretic properties, as well as its cholagogue action.

When the venous circulatory disturbances depend largely upon hepatic insufficiency, the subject usually will at the same time present clinical manifestations dependent upon portal hypertension. The early appearance of urinary disturbances—opsiuria, anisuria and oliguria—decrease of the urinary output from orthostatism and massive absorption of water; of circulatory disturbances in the shape of collateral circulation of portal or cavoportal type, hemorrhoids, possible gastrointestinal hemorrhage and splenomegalia; and lastly, the occurrence of ascites. All these morbid phenomena are proofs of portal hypertension that can be detected early in the process.

For disturbances of diuresis it is necessary first of all to limit the amount of fluid ingested. It must not be forgotten that these disturbances are not due to renal insufficiency and that they are above all evidences of cavoportal circulatory difficulties due to a real barrage offered by the liver. The hepatic gland opposes resistance to the return circulation, while above it sets up an intense venous congestion throughout the gastrointestinal tract resulting in a hindrance to absorption of liquids, while at the same time it sets up venous congestion of the kidneys in turn producing venous hypertension in the renoportal anastamoses. Hence is explained the fact that beyond the liver there is restriction of the blood supply, the arterial hypotension being the most faithful index of this state of affairs.

Therefore, it is a matter of mere common sense to limit the amount of liquid ingested. A milk diet, which is the treatment of choice in all cases of hepatic

insufficiency, should be resorted to with moderation and better in the solid form, namely, fresh cheese, curdled milk, kephir or yaourt. All things considered, not more than 200 c. c. to 300 c. c. above the twenty-four hour urine output are to be allowed. For obvious reasons, it is useless to have recourse to the usual diuretics in hepatic cirrhoses. If, on the other hand, it is desirable to eliminate the retained fluids which are neither absorbed nor excreted by the organism, the use of purgative medication finds its indication. It is all the more effective because it causes the elimination of a large quantity of accumulated fluid to be excreted by the intestine, hence reducing the tension in the portal veins. The best drastic purgatives today are the same as were used two hundred years ago, namely:

Ext. colocynth. comp. (U. S. P.). 50 centigram. F. s. a. pil. moll. no. I.

D. S. Take in the morning on arising.

A less energetic method—old as the hills but efficacious—is to order a soupspoonful to be taken every hour of the following:

Rad. althæ 10 grams.
Aq. dest. q. s.
for decoction of 180 cc.
Add:
Potassii bitart. 15 gram.
Syr. rub. id. q. s. ad 250. c.c.

This medication, useful in the disturbances of diuresis, is also one of the best at our disposal for portal hypertension.

It is clear that a severe diet is essential in cases under consideration, which must take into consideration the two essential elements, viz., hepatic insufficiency and portal hypertension. To overcome overwork of the insufficient hepatic parenchyma and render absorption easier in the congested digestive tract, the meals should be small in amount and frequently partaken of. Six meals a day, at 8 a. m., 10 a. m., noon, 4 p. m., 8 p. m., and 10 p. m. will be found satisfactory. At each, the patient should eat a small amount, the diet being largely lactovegetarian. Vegetable broth, milk in the form of soup and whey and boiled meats. The food should be poor in carbohydrates, albumen and especially fats, the hepatic lesions causing the parenchyma to be intolerant of them. Cooking must be done with cream and fresh butter. White sauces, thin soups, macaroni, cooked peeled vegetables, excepting cabbage, tomatoes, truffles, mushrooms and sorrel, carrots, cooked fruit, sweets containing little sugar and eggs, non-acid preserves and jellies and dry cakes, raw peaches, grapes (without skin) and bananas may be indulged in prudently.

The cirrhotic subject should consume little bread and then only the crust. He should avoid all sea food, eggs, pork, highly seasoned cheese and sauces, pepper, mustard, vinegar and lemons, oil and fats, coffee and chocolate. It goes without saying that alcohol in *any form* is to be strictly prohibited. After a time, when the patient may be allowed a little meat it should be roasted or broiled without butter, white meat being preferable. The patient should drink between meals, not during them. He should lie down after each meal for about thirty minutes. Complete rest in the clinostatic position—especially after meals—is necessary to favor diuresis. Orthostatism decreases the urinary output.

Between meals the patient should drink a hot infusion of boldo or orange leaves in small amount and while in the recumbent position. Tobacco in moderation may in most cases be allowed.

Finally, massage and dry friction of the body, methodically carried out, help to stimulate the hepatic cells and in this respect the hot douch under water as practised at Vichy is beneficial.

I now come to the treatment of ascites. The abdominal swelling preceding the production of the intraabdominal fluid collection is such that it often conceals small collections, but these may be detected by rectal or vaginal digital exploration. However, their pelvic evolution is of short duration, not more than a few months. If the swelling is very considerable, it is better to insert a permanent rectal catheter than to resort to premature and useless paracentesis, because the fluid soon collects again after it has been withdrawn. When the patient is too frequently tapped, serous anemia ensues and not infrequently secondary infection arises.

The proper time to resort to paracentesis is when the collection has reached about several litres, the abdominal walls being sufficiently tense and the umbilicus unfolded. Tapping should be done at once if the abdomen becomes painful, if the respiration is interfered with or if marked edema of the limbs occurs. The immediate necessity of paracentesis is clear when there is thoracic oppression with a sensation of distress, palpitations and persistent insomnia. There are no real contraindications for tapping, regardless of the patient's general condition. If the patient is seized by cardiac collapse, if there are evidences of serious hepatic insufficiency or if the subject is adynamic, one may rightly hesitate. Pregnancy is not a contraindication, but the operation must be prudently carried out.

It is all important to withdraw the fluid slowly until the flaccidity of the abdominal walls and pink color—sometimes cramp—indicate that evacuation is well advanced. The abdominal cavity must not be emptied to the extent of dryness, because gastro-intestinal hemorrhage may ensue, the result of the law of equilibrium of localized portal hypertension (Villaret), and occasionally hemorrhages from the mucosæ or purpura. After occlusion of the puncture wound, a thick layer of cotton batting is placed over the abdomen and a well applied broad bandage exerting an even pressure completes the dressing.

After paracentesis the edema of the limbs retrogresses and absorption of larvate edemas occurs. Edemas occurring in venous cirrhosis have a special mechanism and although a moot question, it would seem that they depend upon the hepatic parenchyma and are wholly different from those due to chloride retention. For this reason a saltless diet is never satisfactory and as far back as 1906, Villaret showed that the edema in these cases did not increase when large amounts of salt were ingested. Of late some observers have even advised hyperchloride diet because of the diuretic action of sea salt. Autoserotherapy with the ascitic fluid advised by Gilbert, of Geneva, has failed to prevent ascites and may prove dangerous, unless the circulatory system and kidneys are in perfect functional condition which is not the case in venous cirrhoses.

(*To be continued*)

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Clinical Physiotherapy of the Liver*

JOSEPH RIVIERE, M.D., P., Sc.D.
Paris

"Of a hundred diseases, says Boerhaave, there is hardly one where the liver will not be affected." The liver is the great chemist of the organism (Richet): it is for that reason that it intervenes in all deviations of metabolism. The bile possesses the important digestive mission of emulsifying fats. It sweeps and cleanses chylifers, after the laborious work of absorption, and it exercises on the intestinal mucus an anticoagulative power. As an antiseptic, it tempers the visceral putrid fermentation.

The vascular liver, besides its glycogenetic function, elucidated by Cl. Bernard, possesses also the hematopoietic mission of elaborating blood, the "martial function" of Dastre, insuring the formation of new corpuscles, by a special power of cytopoiese.

Finally, clinical medicine has led me to see in the liver the great purifying manufactory of the system. I have called it "the defecatory liver."

In my communication on the abortive and curative treatment of acute diseases by calomel, castor oil, heat and water, I showed that the bile is composed of the bulk of the excreta of the organism and that its regular elimination by way of the intestines is necessary to the vital equilibrium and to the cure of diseases. The hepatic gland is the purifying organ in an eminent degree, the seat of biochemical activity, the laboratory of life and health.

The prosperity of many diatheses and particularly of arthritism, humoral acidism, is intimately united with the deficiency of the liver. The intoxication which is derived from it (poisons of autolysis), also the bad elaboration of protein substances, create renal insufficiency nephritis, chloride retention with oliguria.

A real vital manometer, seat of chemical changes, reserve of heat and nutriments, defensive and antitoxic barrier, manufactory of urea, uric acid and purines, hypotensive gland of which hyperemia is sometimes providential, the liver protects us also from infectious diseases and particularly from tuberculosis. Its complete integrity is indispensable to our individual prophylaxis. A sound liver utilizes and exalts all our energy. It is absolutely necessary for good health.

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The liver readily reacts on the stomach and manifests its defective state by digestive atony, nausea in the morning with dizziness, hyperchlorhydric gastralgia and other conditions. So the sufferer from lithiasis nearly always localizes in the stomach his painful paroxysm. However, that does not prevent the lithiasis from often producing a state of hyperpeptical dyspepsia, which may even attain hematemesis.

All the factors of physiotherapy have a beneficent action on the liver, but chiefly those which possess more general effect on the nervous and on the vascular system: X rays, actinotherapy, thermotherapy and d'arsonvalization. Diathermic penetration has seemed to me, for several years, to be the chief cornerstone of the treatment in most hepatobiliary deficiencies. It resuscitates the cholagogue function and improves the proteolysis, restores all the deficiencies, calms the irritability of the gallbladder and congestive disorders, stimulates the cellular diastases of the liver, facilitates the formation of the urea, raises the azoturic relation and restores the compromised digestive assimilation. All these effects are due, certainly, to an action on the vagosympathetic system.

Soon we will show the excellence of diathermy as a treatment of cholecystitis and angiocholitis, the soothing of gallbladder pains and cephalic attacks which accompany them, the raising of the general hypothermia, etc. Our American colleagues, who have made the masterly studies in diathermy that you all know, attributes its favorable effects to a trophic power due to the exaltation of the leucocytic defence.

Before proceeding to surgical procedures, never forget the physicotherapeutical cures, which often succeed, even in troublesome cases.

DEFECTIVE LIVER

Its symptoms are anorexia, dyspepsia for fats; insomnia and invincible somnolence after meals; constant general lassitude, more apparent in the morning than in the evening; a rather frequent sensation of discomfort and gastric fullness, with hot spells, yawning, belching, hiccough, meteorism, epigastric pains, chilliness, urticarial rashes. The disposition of the patient changes; he becomes sad, anxious,

pessimistic, with marked depression of will. The complexion becomes yellowish and the skin dry; the gums bleed and the pharynx is congested.

Heavy eaters and drinkers, sedentary, infected and toxic persons, arthritics, the obese, pregnant women, wet nurses, and those afflicted with the menopause or with acquired or hereditary syphilis are predisposed to hepatic deficiency. In pulmonary tuberculosis (especially when ethylism is associated), the hepatic function decreases and this *méiopragie* contributes singularly to the nutritive decadence, to circulatory trouble, to epiploic and hemorroidal pains. Hepatic deficiency readily creates a kind of hemorrhagic or hemophilic diathesis, expressed by purpura, epistaxis, menorrhagia and metrorrhagia. This predisposition, which Weil recently described under the name of "hemogenia," manifests itself also by a strange fragility of the capillaries, a tendency to varicosities, to facial congestion, blotchiness, more rarely to basedowism or latent myxedema.

On the other hand, hepatic deficiency hinders the uricolytic function of the liver, and favors a state of hyperuricemia, fertile in various accidents, formerly confused with gout and rheumatism; many articular and muscular manifestations, topalgia, neuritis, and other atypical nervous accidents, arterial cardiopathies, melanodermias, and other conditions depend on the torpid liver, the most important tributary of arthritism.

The properly called biliary deficiency, or dyscholia is an important cause of mucomembranous enteritis. The absence of bile in the intestine is indeed fatal: for this secretion possesses on its mucous membrane, an effect so to speak tutelary, antiacid, emulsive, anticoagulative of the mucus, antiseptic, antiphlogistic and peristaltic to the first degree, by its special stimulins, which awaken the falling activity of the smooth fibres.

The treatment of the hepatobiliary deficiencies, dyshepaties and dyscholies, consists in favoring the cellular functions by the cholagogues (calomel, salicylates, podophyllin) which by removing cholesterinemia, cause that viscous polycholia to disappear, premonitory of icterohepatic attacks and also often a prelude to arteriosclerosis.

Copious beverages (coffee and tea) will assure a beneficent diuresis and alleviate the abdominal venous plethora by their dialytic action.

In case of chronic deficiency of the liver, the therapeutic agent required is the complexus of all the agents, which offer by their association the maximum of curative potential, capable of reviving in an almost certain manner, the hepatobiliary ferments. The physical agents have the immense advantage of multiplying the therapeutic power of the medicinal agents and of facilitating their toleration; an important result, in a dysfunction, which breaks down every antitoxic barrier. It is indeed by gradual toxemia that the decrease of vitality is latently produced. The physical agents, more biliary than cholagogic, in general are able to resist cellular inertia, and also paresis of the gallbladder and the hepatic duct; it is especially by this therapeutic process that they restore to the liver its biological activity, also sustained by the use of calomel, purgations, cholagogues, salicylate and bicarbonate of soda.

On the other hand, physiotherapy is notably valuable for protecting the fragility of the hepatic cel against infections and intoxications.

We have frequently noted in treating these complex, pathological and illdefined conditions, resulting primordially from the reaction of the intestine on the hepatic apparatus: the "colonial liver," histological alteration of the organ by poisons invading the bile duct and the portal system. The physical agents then regenerate the vesicular cells and change the diseased mucous membrane of the bile ducts, while removing for the better, the abdominal venous plethora.

CHOLELITHIASIS

Three times more frequent in women than in men cholelithiasis appears readily at the menstruating periods or during puerperality. I have seen it show itself, sometimes, in the form of cardiospasm, accompanied by sialorrhea, noisy eructations and aerophagy. The visceral cramps follow afterwards and the classic hepatic colic comes on after those initial manifestations.

The genesis of lithiasis is explained by biliary stagnation, causing a desquamative angiocholitis, which is complicated by ascending microbism, usually coming from the duodenum. It is also supposed that vesiculocanaliculary scratches may be followed by a fibrous process, whose etiological rôle we shall soon appreciate in speaking of cirrhosis.

Obstinate and rebellious constipation usually accompanies lithiasis. It is to faradization and particularly diathermy that we must have recourse to reestablish the intestinal function in its regularity and suppress the typhlic or cholecystic complications which lead to surgery. Radiological examinations show these morbid hybridities, whose discrimination dates from only the last few years. By diathermy, conscientiously applied, we shall ordinarily evacuate the deposits of stagnant and more or less infected bile; we shall drain the congested biliary ducts, septic or simply affected with *lithogène* catarrh. The patient's complexion will become clearer and his digestion improves as *mastic* stools will regain their normal coloring, as well as the mahogany urine; sick headaches and insomnia, both of cholemic origin, will disappear, at the same time as the icterus and coprostasis. These happy results will be obtained without pain, without colics and without diarrhea.

Under the heading of "little symptoms of hepatism" various authors describe on the whole, the forerunner syndrome of biliary stones "prelithiasis." Sensitiveness of the right *hypocondre,* weighty, swollen sometimes, with shooting pains, if one feels the vesicular region (the x rays localizes perfectly this characteristic pain and differentiates it from the pyloric syndrome, as well as from the solar syndrome); a vesicular sensitiveness which is increased by deviations from diet or rather by the use of certain fatty foods, fermented and distilled drinks, and still more by physical fatigue and moral troubles, sitting up late at night, gambling and sedentariness. The troubles are then exacerbated under the form of nausea, regurgitations, sudden pangs of hunger, pyrosis, swelling, meteorism. The pain irradiates in thoracic stitches in the side, palpitations with a bradycardic pulse and a gastrohepatic cough. Cryesthesia, subicterus, and emaciation are signs of hepatic deficiency, which is the prelude of cholelithiasis and degenerative lesions, implying the ineluctable necessity

of a cellular reparation by the physical agents, without prejudice to hepatic medication (of which we shall speak) and to the special treatment of the supposed cause (alcoholism, syphilis, infection).

Cholesterine constituting the greater part of the biliary stones and originating (according to the theories of your Austin Flint) in a disassimilation of the nervous tissue, and one understands how these concretions follow readily cerebrospinal perturbations and consequently require a radically etiological treatment: physiotherapy.

Hepatic congestion and hepatomegalia often accompany gastroenteritis and dilatation of the stomach, thus connecting themselves with that diathesis of autoinfection which characterizes cholemia and prepares chronic angiocholitis. The liver extends over the false ribs. It presents in its totality an abnormal sensitiveness, often irradiated in thoracic or dorsoscapulary stitches.

Cholemia expresses itself by subicterus, freckles, intestinal disorders (enteritis, appendicitis). Again physiotherapy is most efficacious for the cellular debility of these heredohepatics and will get rid of their symptoms of latent lithiasis due to gravel or biliary mud. For this work of functional renovation, diathermy will be the best treatment to employ and will best break the vicious circle of subintrance, lithiasic attacks.

Evidently, biliary stasis and lithogenous catarrh always remain the two great pathogenic causes of the gallstones. But, since MacCarthy, in the Mayo Clinic, demonstrated that these concretions may originate in the wall itself of the gallbladder (strawberry cells), it is still more rational to suppose that the physical agents, applied directly to the gallbladder, will exercise a curative and preventive action on the lithiasic evolution. Indeed, under the influence of high frequency and radiotherapy, large quantities of biliary gravel are frequently seen to evacuate from the swollen and painful vesicles.

The liver, said Bichat, is the regulator of alimentary hematosis, as the lung is that of airy hematosis. That is why a strict alimentary diet is required for sufferers from lithiasis.

Diathermic currents will more often prevent relapses of lithiasis than hydromineral alkaline cures (which are frequently unbearable to persons suffering from sclerosis, hypertension, and renal impermeability). Under their influence, epigastralgia, latent constrictions, visceral cramps, miniatures of the confirmed colic, will disappear: and the disaggregation of choleliths, their sandy dispersion will manifest themselves, generally after a few séances. I advise, at the same time: vibrotherapy, thoracic faradization and respiratory gymnastics, acting profoundly by the means of ozonized inhalations, convinced that I realize thus, by proximity the direct massage of the vesicular, congested and atonic region.

Mechanotherapy can also remove gravel, especially when one has recourse to the active and passive movements, imitating rowing, swimming, fencing, riding, which are known as the most capable exercises of mobilizing an inert lithiasis.

Semipenetrating röntgen rays, acting at the same time on the nervous system, on the motility of the smooth fibres and the biliary hypocrinia, cause the disappearance of those profound contusive pains, which signalize angiocholitis and are the terror of physicians and patients. Finally we must consider high frequency and the ultraviolet rays to exalt peristaltism and equilibrate the biligenic, antitoxic, and glycogenic functions. Thanks also to their cytologic power, these physical agents can prevent the coagulation of the mucus, which plays the most evident part in the agglomeration of gravel.

All these methods by no means exclude the pharmacotherapeutic agents approved by tradition and daily experience. I have besides observed that electricity constantly reinforces medicinal actions.

There are hepatic attacks which are purely nervous and independent of all gravel: hepatalgia, frequent in women and coinciding fairly often with hepatoptosis. To cure these pains which are sometimes violent (but always exempt from icterus, which distinguishes them from the real calculous colics), it is sufficient to have a few sittings of röntgen rays, galvanofaradism or high frequency effluves.

The vagosympathetic disequilibrium plays a great rôle in bringing on the spasm of the hepatic colic. The infection of the vesicle and of the pericholecystic peritoneum only manifests itself after the neurovegetative instability of the hepatic system. By modifying this "motor neurosis of the biliary ducts" (Chiray), physiotherapy calms and efficaciously prevents every painful paroxysm.

CIRRHOSIS

The atrophic or venous form of cirrhosis is closely connected with alcoholism. It is an ethylic intoxication of the cell, starting usually with gastroduodenitis and prepared, too, undoubtedly, by certain constitutional defects: arthritism, tuberculosis, syphilis. The hypertrophic or biliary form of cirrhosis is oftener only a premonitory period of the hardening and shrinking of the glands by the sclerous atrophic process.

Extreme lassitude, somnolence, incapacity for physical and intellectual work, hypochondria, general pruritus, pains under the right false ribs, development of varicose veins and hemorrhoids, couperose (brick red color), hemorrhagia: all these symptoms insidiously proceed splenomegalia and hydropsy ascites. The urine becomes scarce and charged with urates. The gait is hesitating and difficult.

From the first symptoms, high frequency effluves and diathermy should be applied with a milk diet and cholagogues, against slow and insidious prodromes. Let us not wait for pronounced deficiency, degeneration of the noble cells, proliferation in pronounced furrows, of the fibrous and conjunctive tissues: in the absence of an absolute anatomical reintegration, psysiotherapy is able to furnish these cells with a better functioning, giving the patient a sort of supplementary liver, and removing from him circulatory deficiencies and the dangers of oliguria. As a remedy for abdominal venous obstruction, calomel, sulphate of soda, iodides in small doses, will render great services, with a vegetarian milk diet and especially complete absence of alcoholic drinks.

Among the physical agents, diathermy is most indicated: the cellular exaltation which it excites awakens the most useful defensive reactions by the stimulating of the vasomotor nerves, equilibration of the portal tension, globular regeneration of the blood,

and restoration of physiological tonicity to the abdomen. The peritoneal adherences, boat shaped abdomen, ascending, canicular infections, obstruction by parietal thickening, of the choledochus and hepatic canal, represent so many tangible indications of diathermy. It increases diuresis and keeps off ascites, which is not solely due to the mechanical compression of the vena cava; it reestablishes normal stools and cures functional congestion, by exercising on the circulation of the gland a beneficent regulatory action, which aids the compromised hepatic cell. All these benefits are obtained thanks to an application of electric thermality of about 40° C., which in every visceral sphere creates an incomparable euphoric well being.

To hinder the process of conjunctive hyperplasia and to liberate thus the noble oppressed elements: such is the end attained by all the physical agents, which are all stimulants of cellular vitality. In a disease where the infectious element is known to play the greatest part, physiotherapy always solicits disintoxication. But it is certainly diathermy which shows the most selective action on the liver. The practitioner should count on it, without abandoning, however, the other numerous and varied engines in the physiotherapeutic arsenal.

HEPATIC HYGIENE

This particular hygiene should nearly always strive against hypohepatia, which is the rule in the proceeding pathological conditions and which presents itself with the common symptoms of general dysfunction, emaciation, anorexia, atonic and nauseous dyspepsia, a bitter taste in the mouth, alternating diarrhea and constipation, urobilinuria, discolored stools, icterus or subicterus, glycemia, insufficiency of urea, and other symptoms.

Open air exercise, vibrotherapy, mechanotherapy, sports and hydrotherapy, moderately directed, form part of the general hygiene of a hepatic patient. I am a great partisan of methodical respiratory exercises, which develop pulmonary ventilation and favor the venous circulation. In my opinion, the electric ozonized inhalation realizes the ideal of these gymnastics, whose slow and deep movements, execute by means of the diaphragm, a sort of automassage of the liver, precious against hepatic insufficiency, passive congestion of the gland, precirrhosis, which exists as well as prelithiasis or biliary gravel: an excellent method for fighting against the functional deficiency of the cell and regulating secretions and incretions.

We must avoid intellectual and moral overwork, worries, grief, various emotions, noted since ancient times to have always a fatal repercussion on the liver.

Let us remove from alimentation dishes rich in cholesterine and purines which favor uricemia. For meals, let us recommend regular hours and a thorough mastication: no condiments or stimulants. Let us always associate the use of calomel, castor oil, and salicylate with the physical treatment.

Calomel manifests an elective action on the liver, both on the torpid and on the erethic one. It is an excellent hepatic medicine, acting on biliary obstruction and portal stasis. A marvellous antiseptic and intestinal antitoxic, and a mercurial chloride, it solicits a salivary and pancreatic hypercrinia which contributes as much as the biliary hypercrinia, to the hepatointestinal detersion. It destroys neither diastasis nor useful ferments, ameliorates the renal epithelium and combines its diuretic rôle with its disintoxicating power, which denominates the notable diminution of the sulphoconjugated acids in the urines: that is why venous stasis, edema and ascites are favorably influenced by calomel.

Castor oil, an excellent, intestinal derivative, purging quickly and without colics, completes and perfects the eccoprotic action of calomel.

Salicylates, given in small doses, act like antiputrides promptly eliminated, fluidizing the bile, increasing the urea and diminishing uric acid, by removing from the economy a notable proportion of glycocoll.

The curative results of medicaments, calomel, castor oil, salicylate of soda, are much more complete (as we have often shown) when (with the aid of diathermy, ultraviolet rays and other physical agents) we try at the same time to decongest, deobstruct, and revive the gland and act electively on the solar plexus, which has the chief command over its vitality. Everyone knows that icterus may show itself suddenly, by the nervous contraction of the excretory ducts of the bile: this spasmodic icterus can be rationally treated by diathermy and electric radiations, which overcome dysfunction and restore the biliary flow to its normal condition.

Let us add that physical therapy is particularly efficacious against arthritism and diseases of nutrition; if it cures daily, rheumatic, gouty, obese, diabetic, asthmatic, eczematous and nervous patients, it is by the intermediary of the liver, the generator of these proteiform diathesis. In acting on the liver, our methods restore all the physiological perversions, for the hepatic rhythm, broken or deviated, creates in the end, or confirms by persistence, the most serious organic lesions.

SUMMARY AND CONCLUSIONS

1. The functional deviations of our enormous gland, the liver. are, for us, the dominant causes of the acute diseases and chronic conditions mostly observed in practise.

The bile which we consider to be composed of the majority of the excreta of the organism, plays a considerable part in clinical medicine. Its lack of normal elimination by way of the intestines is the chief cause of all disorders in health.

The liver is really, by its volume and the importance of its function, a veritable laboratory of life. Its deficiency or functional deviation creates a morbid condition.

The perfect integrity of the *defecatory* function of the liver is indispensable to nutritive mutations and organic equilibrium.

2. The clinical symptoms of hepatic deficiency (or torpid liver) are of a fundamental importance in practise, and the rational treatment of dyshepatias represents the most important of prophylaxis. We assure the success of chemical medications (calomel, salicylate, carbonate of soda) by combining with them, the renovating action, cellular and nervine regenerator, attributed to the specialized, or better associated physical agents, principally diathermy or electrothermopenetration combined or not with actinotherapy and vibrotherapy.

3. The combined treatment prevents and cures the

common manifestations of cholelithiasis, its complications and allied conditions. If we act in the period of cholelithiasis, we shall more often avoid the painful attacks of hepatic colic and the dangers of infectious angiocholitis. A strict alimentary hygiene, cholagogue medication and physiotherapy constitute here the therapeutic triad. Among the physical agents, hepatic diathermy, vibrotherapy, faradization, the ozonous inhalation, mechanotherapy, and at times high frequency, the ultraviolet and x rays should be employed. For their precision and curative energy, a special place should be given to the diathermic currents. All these agents cure, by activating biliary excretion, remedying the vagosympathetic disequilibrium, stimulating and restoring the deviated nervism.

4. The hepatic appanage of alcoholism, cirrhosis, is a proliferation of conjunctive tissue, whose sclerotic tractus destroy and degenerate the noble cells of the liver. We must not wait for the trophic processes to be too far advanced, to apply an efficacious treatment to cirrhosis. The milk diet and certain hepatobiliary medications, exalting the defensive reactions of the cell, find in diathermy and in the other physicotherapeutic agents the adjunct to a beneficent struggle against the fatal conjunctive hyperplasia, and for the liberation of the oppressed anatomical elements of the hepatic gland. The infectious syndrome, which is always more or less mixed with cirrhosis, is at the same time neutralized by heat, light, electricity, movement and radioactivity, etc.

5. The hepatic hygiene consists above all in preventing hypohepatia, the functional diminution of the organ from the first cholemic symptoms (modern cholemia is nothing else than the ancient bilious temperament). All the physiotherapeutic modalities may here be employed, at the same time as a strict alimentary régime, laxatives and cholagogues, calomel, castor oil, salicylates and alkalines.

Some Interesting Surgical Procedures with High Frequency Electric Currents*

GRANT E. WARD, M.D.
Baltimore, Md.

Surgical electrothermic methods are generally employed in treating malignancy, but I find the high frequency current of great value in some other conditions as well. It is my purpose to describe briefly a few of the electrothermic methods applicable as an adjunct to the surgeon's armamentarium. I omit all discussion as to the types of currents and the apparatuses generating them, as they have been previously discussed (1).

Radical resection of the inferior maxilla.—I include a description of an operation for resection of the inferior maxilla for advanced malignancy in order to illustrate the tremendous field for extensive operations without the scalpel and with but few or no ligatures, while at the same time throwing a barrier of coagulated tissue around the growth against any implantation of viable cells and metastasis through the lymph and blood streams. The technic of establishing this line of coagulation around and under the growth, prior to removal, has been developed by Clark and Wyeth, and is termed circumvallation by Kelly. I redescribed this technic in the above mentioned article, and employ it constantly in removing malignant tumors. In the case under consideration the patient had an advanced squamous cell carcinoma of the lower jaw, extending from one mandibular angle across in front to the other angle, and invading as well the floor of the mouth and undersurface of the tongue, reaching down to the hyoid bone. Most of the chin had sloughed away, and there was involvement of a large portion of the skin covering the jaw. Fortunately, there were no palpable metastatic glands. The patient had had previous radium treatments, curettings and partial operative resection.

After heavily implanting the disease with glass radium emanation seeds, I resected the jaw under interrupted ether anesthesia, and with an almost bloodless procedure, tying but three vessels, one at each angle of the inferior pillar of the fauces with the tongue, and the third lower down in the right side of the neck. The line of coagulation circumvallating the growth extended from the angle of the mouth on the right side, back to the angle of the jaw, through the bone and down into the neck, then anteriorly to the midline of the neck just above the hyoid bone. A similar line of coagulation was carried from the left angle of the mouth through the cheek to the angle of the jaw, then down to the neck and anteriorly to meet the line from the right side. As the more effective acusector (endotherm knife of Wyeth) was not then available, a scalpel was used to cut through the line of coagulated tissues. The depth of coagulation was from five to ten millimetres; greater penetration would have been possible by stronger currents applied for a longer time with the needle inserted further into the tissues. After cutting through the line of coagulation, a new advance line was laid at a deeper level, and so on until the jaw was amputated. The bone was treated with the high frequency bipolar current, and cut through with a rongeur; it yielded much more easily after treatment with the current than live bone.

There was no pain in the convalescence, and no secondary hemorrhage. Under dressings saturated with sodium hypochlorite, healthy granulations promptly sprang up, and the patient soon presented an entirely different appearance. Whereas the whole lower jaw was a sloughing offensive cancerous mass, the wound was now fresh and clean and the patient far more comfortable. The tongue was held up by bandages around the head so that liquid foods were taken readily and the patient lived in comparative comfort for the four remaining months of his life.

*The Howard A. Kelly Hospital, Inc.

Fig. 1.—Radical resection of the inferior maxilla. View of left side of face.

Death was probably due to malnutrition, as there was no evidence of internal metastases. Recurrences appeared beneath the tongue close to the hyoid bone, and along the left cheek, which were treated by the implantation of radium emanation seeds and local applications of radium emanation.

This operation illustrates how extensively high frequency currents may be employed in advanced malignancy in cleaning up nasty sloughing areas, and giving comfort to the sufferer. Such an example demonstrates *a fortiori* how much can be done in all lesser degrees of advancement to save lives not to be helped in any other way, and is surely an occasion for rejoicing.

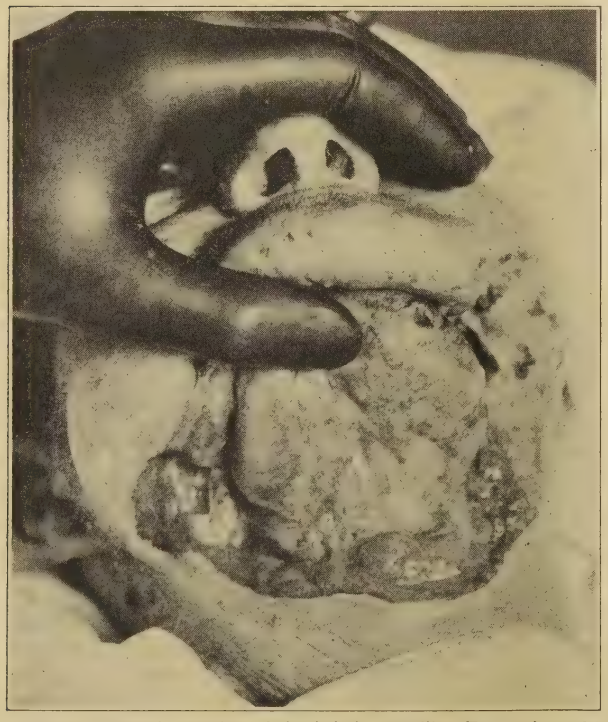

Fig. 2.—Radical resection of the inferior maxilla. Front view with tongue held up. Note healthy granulations which quickly spring up after electrothermic operations.

Hemostasis without suture.—In this Journal (2) I previously described a technic for hemostasis without suture which I here illustrate again to emphasize its value in extensive operations as described above. Occasionally large bloodvessels are opened in spite of the coagulated tissues through which the incision is made. These are caught at once with clamps and coagulated by applying the current through the hemostats one by one.

This method is of special value in opening the abdomen or removing the malignant breast as described by Howard A. Kelly (3) and the author. The accompanying photograph (Fig. 5) is of the first patient on whom a radical breast operation was done

Fig. 3.—Radical resection of the inferior maxilla. Front view with tongue dropped.

without any ligations. Hemostasis was secured by the clamp coagulation method. We have adopted the safer policy of tying the primary branches of the axillary vessels but coagulating all others.

Surgical treatment of epithelial lined cavities.—High frequency currents play an important part in the surgical treatment of epithelial lined cavities. This field was opened by an interesting and successful operation for a ranula, described by me (4). The patient, a young woman, was operated upon under local anesthesia, and spared the prolonged hospitalization necessary after a more radical operation. The cyst was opened anteroposteriorly with the acusector, and the epithelial lining destroyed by desiccation with the monopolar current. The almost invisible scar allows perfect function.

Some weeks after this, I was associated with Dr. Kelly in a laparotomy for pelvic disease on

FIG. 5.—Patient upon whom a regular breast operation was performed without ligations. Hemostasis was secured by clamp coagulation.

a patient who also had a large postoperative hernia. After completing the pelvic operation, the hernial sac was severed from its junction with the intraabdominal parietal peritoneum, and the abdominal cavity closed. To resect the sac with the scalpel involved a tedious, bloody procedure. The operation was therefore completed by destroying the epithelial lining of the sac with a monopolar current, following the technic used in treating the ranula. The fascia layers were then brought together and the wound closed as usual in repairing a postoperative ventral hernia. The

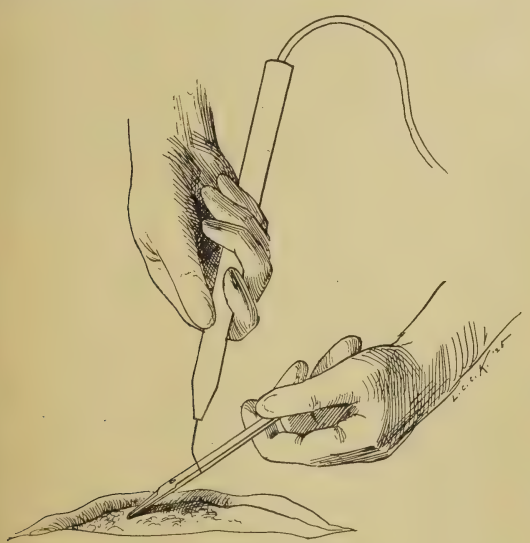

FIG. 4.—Hemostasis without suture.

patient made an uneventful recovery without infection, and the thin layer of desiccated tissue was evidently readily absorbed. Here an awkward, prolonged operation was converted into a simple one, and the duration of anesthesia and consequent risk lessened.

Recently Dr. Kelly has employed this treatment of epithelial lined cavities in small benign cysts of the ovary. While operating in the pelvis for other disease, small bilateral cysts of the ovary were encountered, opened, evacuated, the cyst wall desiccated with a monopolar current, and the cavity obliterated with a fine catgut suture, replacing the longer and more bloody resection of the ovary, while preserving all of the normal ovarian tissue.

Rectal polyps.—The bipolar damped high frequency current is invaluable in removing single or multiple polyps of the rectum, an operation accompanied by little or no bleeding, employed by William L. Clark for some years in bladder papillomas.

If the tumor is small, the operation can be done

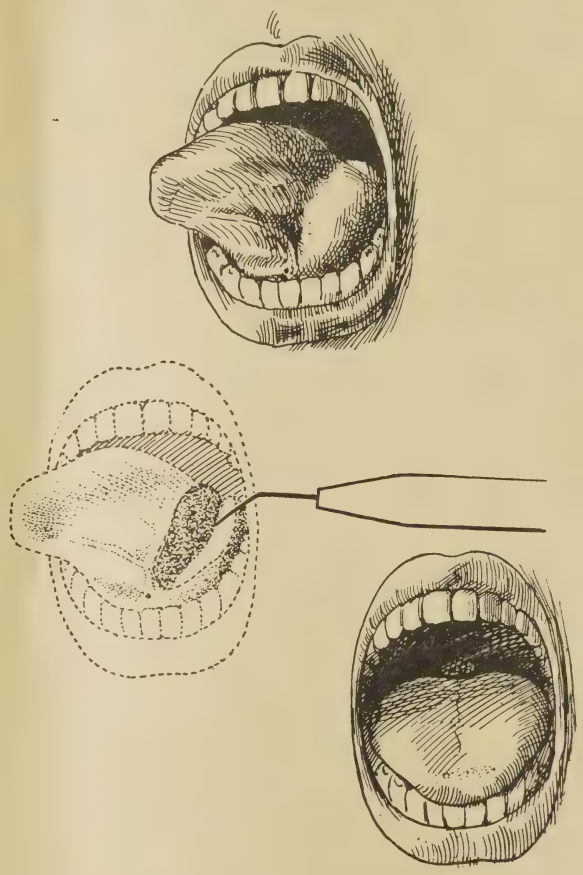

FIG. 6.—Ranula treated by incision with acusector and desiccation of epithelial lining. Perfect result.

through a cylindrical proctoscope, preferably of hard rubber or glass, with the patient in the knee chest posture. A tonsil snare is thrown around the pedicle of the tumor, and the current applied to the metal handle of the snare. As the pedicle is coagulated, the snare is slowly tightened so as to cut through the base. The tumor drops off, leaving a white dry surface. In treating massive tumors, the patient takes a general anesthetic in the lithotomy position, and the rectal sphincter is thoroughly dilated and the mass exposed by an insulating cylindrical proctoscope, or with a bivalve rectal speculum. Frequently the tumor is made more accessible by lateral vaginal retractors. In a recent case the rectum and ampulla were choked with the papillomatous growth, springing from a number of areas. Twelve large pieces were removed, showing papillary carcinoma. Some of the polyps

were too large to be engaged in the loop of the snare. These were attacked piecemeal by snaring off separate portions. In case of malignancy, a plaque containing radium emanation tubes should be applied to the base of the growth after removal, and a dose of thirty to forty millicurie minutes given directly to each area of an inch and a half in diameter, while carefully protecting the surrounding normal rectal mucosa. Healing takes place promptly following separation of the slough which comes away in from five to seven days after the operation. The scars are soft and pliable, and there is no postoperative pain.

SUMMARY

1. High frequency currents properly used surgically are of great value in relieving patients having extensive malignancy of the lower jaw.

2. Hemostasis may be secured by the clamp coagulation method without the use of foreign ligature material.

3. Epithelial lined cavities, as ranula, postoperative hernias, and benign ovarian cysts, are effectively treated and closed without long difficult dissection.

4. Rectal polyps can be cleanly removed by tonsil snare coagulation with little if any bleeding, and with less likelihood of recurrence and metastasis.

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Ultraviolet Therapy in Pediatrics*

EDWIN T. WYMAN, M.D.
Boston

Ultraviolet rays in the treatment of many diseases of infancy and childhood are now recognized as a very valuable therapeutic measure. Direct sunlight is probably the most effective way of giving this form of treatment.

Our knowledge regarding the sun's rays has been materially advanced by scientific investigations during recent years. It has been found that the rays of light which may be referred to as the healing or curative rays, lie in the ultraviolet zone. It has been found also that these ultraviolet rays in the sun's spectrum vary in intensity during the different seasons of the year being highest during the summer months and lowest during the winter months. It is believed that this seasonal variation is due to the absorption of the shorter wave lengths by the atmosphere. In any event, it is evident that from a therapeutic point of view, the determining factor is the quality not the quantity of these short or ultraviolet radiations.

Here, in New England, during the warm summer months it is possible to use direct sunlight in treating infants and children. It is impracticable to expose an infant to the direct rays of the sun and it is inadvisable to expose older children during the fall, winter and spring months on account of the cold and consequent loss of body heat. This difficulty, however, may be overcome by the use of a quartz window or a glass which is transparent to ultraviolet rays so that the baby can have its sun treatment in a warm room. There are two such glasses on the market at the present time, Lamplough's vitaglass, an English product, which the manufacturer asserts transmits the actinic rays to the extreme limit of the sun's spectrum 290 millimicrons, and a new ultraviolet transmitting glass which is manufactured in Corning, New York. This latter glass, the manufacturer states, transmits to two hundred millimicrons in three millimetre thicknesses. Its transmission for wave lengths of 290 millimicrons, the extreme limit of the sun's rays through the atmosphere, is eighty-six per cent. through a two millimetre thickness (uncorrected for surface reflections) as measured by the Bureau of Standards. For purposes requiring a full transmission of ultraviolet light from the sun, therefore, this glass is practically the equal of clear fused quartz. The cost of producing this glass is somewhat above that of window glass but is far below that of quartz. If this glass is all that it is stated, it should be ideal for nursery windows where the baby can have its daily sunbath, for hospital windows and a number of possible applications for the use of ultraviolet light in the sun's rays. However, during the winter months in New England, it is questionable whether or not there are sufficient ultraviolet rays in the sun's spectrum to be of much therapeutic value, although, our experiments, not yet published, tend to make us believe that the sun's rays through a quartz window are of definite therapeutic value even during the winter months.

When direct sunlight is used, we use the following scheme of exposure:

INFANTS

The sun bath can be given in a room with the sunlight coming through an open window, on a veranda or sunporch, or in the shelter of a garden or yard. If given in the open the infant should be protected from the wind by a cloth screen on three sides. A sheet draped on three sides of the crib will do, although, it is better to have the shelter four or five feet high. On cool days the hands and feet should be kept warm by means of mittens and socks, and a hot water bottle or an electric pad can be used to maintain the body heat. By means of an open window or door, the bath can be given in a warm room, free from drafts. In starting the treatment the infant should wear a diaper, band and shirt. The head and nape of the neck should be protected from the direct rays of the sun by a sunshade, cotton hat,

*Read before the First Annual Meeting of the New England Association for Physical Therapy, Boston, October 26, 1925.

or a sheet draped over the head of the crib. During July and August the bath should be given between 8 and 10 a. m., or between 2 and 4 p. m. In June and September it should be given in the middle of the day. At the start the baths may be given two or three times a day, and, as the length of exposure increases, the number of baths are gradually decreased to one or two a day, depending on the complexion of the patient and the intensity of sunlight.

Scheme of exposure:—The legs and lower thighs are exposed to the direct sun's rays for five minutes, front and back. The exposure is increased five minutes, front and back, each day until on the third day the legs and lower thighs are exposed for fifteen minutes, front and back. On the fourth day the diaper is removed after the legs and thighs have been exposed for fifteen minutes and a total exposure of twenty minutes is given to the front; then the diaper is replaced and the exposure is repeated to the back. The exposure is increased five minutes each succeeding day until on the sixth day a total exposure of thirty minutes is given to the front and to the back. On the seventh day the diaper is removed after the legs and thighs have been exposed for fifteen minutes; then, after a total exposure of thirty minutes, the band and shirt are removed and the exposure continued for five minutes longer until a total exposure of thirty-five minutes is given to the front. The diaper, band and shirt are replaced and the exposure repeated to the back. On the succeeding days this same scheme is followed, increasing the total exposure five minutes each day until on the twelfth day a total exposure of sixty minutes is given to the front and to the back. On the following days the diaper, band and shirt are removed five minutes earlier in the exposure each succeeding day so that on the fifteenth day the diaper is removed at the beginning of the bath and the shirt and band are removed after fifteen minutes exposure. On the eighteenth day the diaper, band and shirt are removed at the beginning of the bath and a total exposure of sixty minutes is given to the front and sixty minutes to the back. After the eighteenth day general exposures of one hour to the front and one hour to the back are given.

CHILDREN

The same scheme is used with children. First the legs and thighs are exposed, then the abdomen from the ribs to the hips, and last the chest.

This scheme shows the usual progression in normal cases; it does not represent a hard and fast rule and can be varied depending on the general condition of the patient, the tolerance to sunlight, temperature and wind, height of the sun and clearness of the atmosphere. It is better for patients whose skin burns very readily to take shorter treatments, three or four a day, to more gradually accustom the body to the sun. Many patients with dark skins can withstand twice the exposure given in the table. The whole object of the scheme is to get the patient well tanned without sunburn.

At present during the winter months and on cloudy days in summer, it is necessary, in treating infants, to use a substitute for sunlight. The mercury vapor quartz lamp at present surpasses all other sources in ultraviolet efficiency and is the best means of artificially producing rays similar to the short therapeutic rays in the sun's spectrum. The sun's spectrum ends abruptly at about 296 millimicrons, due to the absorption of all shorter wave lengths by ozone in the atmosphere. The mercury vapor quartz burner emits ultraviolet radiation, consisting of a continuous spectrum between 185 and 400 millimicrons, upon which is superimposed the mercury arc line spectrum, the principal lines of which are at 364, 313, 302, 280, 265, 240, 200 and 185 millimicrons. There are many other lines, but those mentioned above are the most intense. The two lines 265 and 255 are especially strong. The line 364 is the strongest line of the mercury ultraviolet spectrum. Experiments (1) with light filters in irradiating cholesterol solutions seem to show that rays of 302 millimicrons or less are necessary to confer antirachitic property.

There are three American mercury quartz lamps on the market. The Alpine sun lamp, the Burdick lamp and the Victor lamp. Both the Burdick and Victor lamps have the same burner, the Cooper-Hewitt uviarc.

We are now using Alpine sun burners in the outpatient department and medical wards of the Children's Hospital when individual treatments are given. In the Infants' Hospital, we are using a room with four Burdick lamps suspended near the ceiling, arranged to give as even a distribution of light as possible over the cribs. This permits us to treat a number of patients at the same time. The room contains ten cribs. The individual treatments are given with the lamp at a uniform distance of twenty inches from the surface of the body. The entire surface of the baby with the exception of the head is exposed. The head is protected by a sheet draped loosely over the head of the crib, or, when a table is used, the sheet is draped over a farmework on the treatment table, coming down over the baby's neck. The front and back are given the same exposure. The patients are divided, because of the variation in skin tolerance, according to their complexions, light, medium, dark and black. When individual treatments are given with the Alpine sun burner, the light complexioned patients are started at two minutes exposure, front and back, and the time of exposure increased two minutes, front and back, each treatment, until the total exposure of twenty minutes, front and back, is given. The medium complexioned patients are started at three minutes exposure, front and back, and increased three minutes, front and back, until the total exposure of twenty-five minutes, front and back, is given. The dark complexioned patients are started at four minutes, front and back, and increased four minutes front and back, until a total of thirty minutes, front and back, is used. The black or negro babies are started at five minutes, front and back, and increased five minutes, front and back, until a total of thirty-five minutes, front and back, is given.

In the light room of the Infants' Hospital, equipped with four Burdick lamps suspended from the ceiling, having a vertical tube distance (from the patient to the burner) of seven feet six inches, the same method of exposure is used as with the individual treatments, except that the total exposure of the light complexioned patients is increased to thirty minutes.

front and back, the medium complexioned babies to a total of forty minutes, the dark compexioned patients increased to fifty minutes and the black or negro patients' exposure is increased to a total of sixty minutes, front and back. The ward patients are given daily treatments while the patients coming in to the out patient department are given treatments three times a week. This method of treatment is used in all types of cases. The time of exposure has to be shortened occasionally on account of a very delicate skin. The time given above for individual treatments with the Alpine sun burner is longer than should be used when new burners are employed as the efficiency of our burners has diminished with length of service.

RICKETS

Rickets occurs universally in northern civilized countries, such as Europe and North America, where there is lack of sunlight during the winter months. The seasonal variation in the recurrence of rickets offers striking evidence of the part sunlight plays in the prevention of the condition. Rickets flourishes generally under poor hygienic surroundings, and especially under conditions where direct exposure to the rays of the sun is infrequent or entirely absent. Rickets can be cured both clinically and in experimental animals with certainty by the administration of cod liver oil. It can also be cured with certainty by the action of ultraviolet light.

In 1923 a special clinic for the treatment of rickets with the mercury vapor quartz lamp was started in the out patient department of the Children's Hospital, Boston. This clinic has been carried on since that time, except during the summer months when the patients are given daily sunbaths at home in place of the Alpine lamp treatments. In this time, we have treated about two hundred cases of rickets (varying in severity) with universal success. We concluded after treating a number of rachitic patients with ultraviolet irradiation and a number of rachitic patients with both ultraviolet rays and cod liver oil, that the combination of cod liver oil and ultraviolet light probably hastened the healing process more than either ultraviolet rays or cod liver oil alone. At present, we are treating the moderate and severe cases of rickets with both ultraviolet irradiation and cod liver oil. The mild cases are treated with cod liver oil alone, as it seems unnecessary to have the patient make extra trips to the hospital for light therapy. The length of time required to cure severe cases, as shown by röntgenograms and the serum calcium and phosphorus concentration, is from six to eight weeks. They are then discharged from the "light clinic" and cod liver oil is continued to prevent a recurrence of the disease.

SPASMOPHILIA

Spasmophilia is a nutritional disease characterized by convulsions, carpopedal spasms, laryngismus stridulus and an extreme irritability of the nervous system to mechanical and electrical stimulation. The blood chemistry shows a low serum calcium concentration. It has been made quite clear that all cases of infantile tetany have rickets, but all patients with rickets do not have tetany. To treat an established spasmophilia one must use measures that will increase the blood calcium rapidly and permanently. Ultraviolet therapy has been shown to exert a favorable influence in tetany. These rays not only influence the symptoms favorably but the symptomatic relief is paralleled by a return of the calcium concentration in the blood serum to normal. The treatment followed at the Children's Hospital is to give calcium chloride, ten to twenty grains three times a day, in addition to ultraviolet irradiations. The result has been uniformly good. If rickets is present to a marked degree, as is often the case, the treatments are continued until the rachitic processes are healed. After the patient is discharged from the light clinic, cod liver oil is continued to prevent the recurrence of rickets, and calcium chloride is continued for a time to prevent the recurrence of tetany. The time required to cure the average case is from ten days to two weeks.

TUBERCULOSIS

Gerstenberger and Wahl (2) and others found the ultraviolet ray of decided value in the treatment of peritoneal, glandular and osseous tuberculosis. They think that of the glandular forms the mesenteric was most rapidly improved; next the mediastinal and last, the peripheral. Beneficial results were not obtained in pulmonary tuberculosis of the miliary type, although treatments were begun early. The patients we have treated for tuberculosis of the mediastinal glands and tuberculosis of the mesenteric glands have responded well to ultraviolet therapy. The treatments have seemed to improve their general condition, to relieve the symptoms, such as cough in the bronchial cases and abdominal pains in the mesenteric cases, and to favor early calcification of the glands. Our results in the cases of tuberculous peritonitis have been variable. It is not expected that ultraviolet therapy will cure all cases of tuberculous peritonitis. However, our cases show that it is a valuable therapeutic measure. We believe that it should be used unless there is marked febrile reaction. It is much more difficult, in treating tuberculosis and many other diseases with ultraviolet rays, to draw definite conclusions as to the benefits obtained from this form of therapy, because in rickets and tetany the blood chemistry and x ray give confirmatory evidence of recovery. One has to depend almost entirely on clinical findings to note the progress of the case and it is often difficult to tell how much the disease has been influenced by the rest, fresh air, proper nourishment and general hygiene given as routine treatment in addition to the ultraviolet rays.

PSORIASIS

We have observed marked improvement in all the patients treated for psoriasis while they received treatment.

FURUNCULOSIS

Our results with furunculosis have been favorable, although in most cases the improvement was no more marked than when the ordinary treatment was used. Some persistent cases, which did not respond to vaccines and local treatment, cleared up rapidly, however, with ultraviolet therapy.

ECZEMA

We have not found this form of therapy useful in cases of eczema, although in some instances, with ad-

ditional infection of the skin, the germicidal properties of the light helped to clear up the infection.

BRONCHIAL ASTHMA

We have used this form of therapy in a case of bronchial asthma in which the child has a sensitization to bacteria. After other forms of treatment had failed, ultraviolet irradiations had a most beneficial effect. The attacks have become less frequent and less severe and the patients were improved in all respects.

CONCLUSION

1. In conclusion it may be said that direct sunlight is a useful therapeutic measure in the prophylaxis and treatment of many diseases in infants and children.

2. With the development of glasses capable of transmitting ultraviolet irradiations it may be possible to have these windows in hospitals for treatment of infants and children during the winter months and also in every nursery so that the baby can have its daily sunbath in a warm room.

3. The mercury vapor quartz lamp can be used as a substitute for sunlight and has the advantage of being available regardless of sunshine and weather. It can be given indoors so that it will not subject the child to cold and the doses can be accurately gauged.

4. There is, however, a real danger of becoming too enthusiastic about ultraviolet therapy less this form of treatment be looked upon by the physician and his patient as a quick and sure cure for all ailments.

5. It can be said that ultraviolet therapy is a specific in the treatment of rickets and spasmophilia and is a valuable therapeutic agent in the treatment of tuberculosis of the mesenteric and bronchial glands and tuberculous peritonitis and is useful in psoriasis and some persistent skin infections.

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Diathermy—Its Physics and Clinical Indications

RICHARD KOVACS, M.D.
New York

Due to the extensive and succesful application of physical therapeutic measures during and after the World War—when millions of men had to be put back into functional ability in the shortest possible time—the medical profession of America is showing considerable interest in the employment of physical therapy in the various departments of medicine. In response to this interest, manufacturing concerns are turning out an increased number of efficient apparatus and are pushing their sale by advertising and by the subtle force of the itinerant lecturer. The wholesale buying and employment of apparatus on salesmen's advice is, however, not going to insure the proper place and employment of physical therapeutics in the physician's armamentarium. Only the comparative and unbiased study of the various forms of physical therapy, the clear visualization of their nature and their mode of action on any particular pathological condition, together with the appreciation of the correct technic of application, will enable physicians to be truly progressive in this rapidly expanding field of therapeutics.

In order therefore to evaluate the place of high frequency currents in therapeutics we must first become acquainted with their relation to the other forms of therapeutic electricity. Electricity in the commercial world is used for three main purposes: for chemical action (electroplating); for mechanical action (driving of motors, dynamos); and for heating (coils in heaters, toasters, curling irons, etc.) In the human body, a similar grouping of the effects of electricity can be accomplished, according to the form in which electricity is applied. The determining factor will be whether the electricity as employed is of constant flow (galvanic) or alternates at low frequency (faradic and sinusoidal), in both cases of low tension, or whether it is of high frequency and of high tension.

Electricity of constant flow and low tension acts on the human body as a chemical substance (electrolyte) by causing definite action round and between its poles and the wandering of ions in the interpolar path. The action at the poles is stimulation and reflex irritation, due to improved circulation and cellular activity, besides each pole exerts a distinct caustic action, the positive pole (anode) being acid caustic and thus hardens tissue, stops bleeding and repels bases, while the negative pole (cathode) is alkaline caustic, softens tissue, increases bleeding and repels acids. An example of the polarity action of the galvanic current is its employment under the designation of electrolysis, for the removal of superfluous hair: a fine platinum needle connected to the negative pole is introduced into the hair follicle and the caustic substance formed around the needle will destroy the follicle. The interpolar action of the galvanic current is mild heat.

When the galvanic or constant current becomes interrupted or rhythmically reversed (sinusoidal current) over muscular parts of the body, gentle or vigorous muscular contractions are produced and this mechanical action is utilized for the treatment of muscular atrophy or paralysis or for tissue stimulation.

The faradic current is an irregularly alternating current and produces painful sensory stimulation of the skin and on account of the rapid sequence of the individual peaks of its flow, a tetanic contraction of normal muscles. It is used as an important diagnostic evidence that the nerve supply of a muscle is intact.

All these forms of electricity have only a relatively

superficial action of the human body; because of their polarity action, the muscular contractions and the painful sensory stimulation caused, they cannot be employed at sufficiently high tension (voltage) to penetrate deeper parts. d'Arsonval of Paris made the discovery in 1888 that an electrical current alternating less than fifteen times per second produced a succession of separate or clonic muscular contraction, at twenty to thirty per second a continuous contraction (tetanus) the intensity of which increases till a frequency of about three hundred is reached. A further increase of frequency causes a decrease in the strength of contraction until at a frequency of ten thousand per second absolutely no effect is produced upon either the motor or sensory nerves. The reason for this phenomenon is that with the extremely rapid changes in the direction of the current there is no possibility for the development of electrochemical reactions. High frequency currents travel through the body tissues as solid conductors, and subject to the laws of electrothermic reaction, produce heat within these conductors in proportion to their resistance. The patient has no other sensation except that of warmth, and this can be easily regulated from extreme gentleness to the cooking or destruction of tissues. All medical forms of high frequency currents are absoutely painless because they stay within the limits of physiological heat toleration of the tissues. When the same heat, however, is emplayed for the purpose of surgical high frequency or the destruction of tissues, the sensation of pain naturally returns and in most cases the employment of a local or general anesthetic becomes necessary.

PHYSICS AND CLASSIFICATION OF HIGH FREQUENCY CURRENTS

The essential parts of any high frequency apparatus are, 1, a supply of alternating current, either directly from the AC mains or the change of a direct current supply into an alternating one by means of a rotary converter; 2, a high frequency circuit, which raises the voltage or tension of the current by means of a step up transformer and its alternation or frequency by a condenser—spark gap arrangement. The patient is connected in shunt to the high frequency circuit and as at times his body offers less resistance to the high frequency current, than the internal resistance of the circuit itself, the part of his body included between the electrodes connected to the two terminals of the machine will be traversed by high frequency current.

There are three main types of high frequency machines in existence, 1, the older type of d'Arsonval, in which currents of relatively high voltage (tension), of relatively low amperage (volume) and of intermittent and dampened oscillations are produced. Such currents exert a general systemic effect, increase metabolism, lower the blood pressure, but produce only a moderate amount of local heat. They are properly called "currents of tension" but can be disregarded from the practical standpoint of this paper; 2, modern apparatus furnishing diathermy type of currents, which are of relatively low voltage, of high amperage and of sustained and dampened oscillations. Such currents exert a very marked amount of local heat and are called "currents of quantity" or diathermy; 3, the latest developments are machines producing undampened oscillations by a radio bulb apparatus or other arrangement, furnishing a "cutting" current for eminently surgical purposes.

Either of these three types of machines can be used for either medical or surgical action, i. e., local or general stimulating or local destructive action, and can be applied either from two terminals or one special terminal, i. e., in form of a bipolar or monopolar application. An elaborate and for the beginner decidedly confusing terminology has been built up to signify all these varieties but in this short presentation we will confine ourselves to some of the details of the second type of currents; the diathermy currents.

PHYSICS OF MEDICAL DIATHERMY

The modern diathermy machine, producing oscillations of one to two millions per second at a comparatively low voltage, makes it possible that currents from five hundred to three thousand milliamperes are driven through the tissues of the body without any other sensation than that of heat. The body tissues act as solid conductors in such event, and there are definite measurements available as to the conductivity of animal tissues to electrical currents. According to Alt and Schmidt if the conductivity of muscle and blood is 1,0, the relation of other tissues is as follows: nerves 0,17, skin 1,25, brain 1,57, tendon 3,25, fat and fascia 3,92, bone 14,1. The degree of heat produced will depend on the following factors: 1, The strength of the current; 2, the size of the electrodes. The same current will produce a higher temperature under a small than under a large electrode, because its density will be greater in the region of the small electrode. We utilize this fact to localize the maximum amount of heat at will at any plane between the electrodes by varying their size. With electrodes of equal size properly applied, the maximum amount of heat will be half way between the electrodes; 3, the type of tissue traversed, as according to Jouloes law the heat developed in a conductor is in direct proportion to its resistance. Ordinarily, however, the diathermy current will travel by the way of the less resistant tissues. If, for instance, the current is passed longitudinally through a limb, it will heat up the less resistant soft parts especially the bloodvessels, and have comparatively little effect on the deeply situated bony structures. If we want to heat these we must pass the current transversely through the joint, so there should be no path of less resistance open.

PHYSIOLOGICAL EFFECTS AND INDICATIONS FOR MEDICAL DIATHERMY

The local effects of diathermy are based on the fact that heat is generated within the tissues. Such heat is much more effective than heat obtained by means of conduction as by hot applications or by convection as by radiant light and heat, which merely heats the surface.

Heat applied externally cannot penetrate deeply, 1, on account of the skin resistance; 2, on account of the circulating blood, which as part of the heat regulating mechanism of the body will tend to distribute any excess of local heat evenly all over the organism. The heat of diathermy is produced within the tissues

by the transformation of electrical energy into thermic energy, and is produced faster than the heat regulating mechanism can dissipate. Experiments by many investigators have shown that the human tissues can stand up to about 116 to 118° F. of heat without damage. Cumberbatch found that the sensitive female urethra will tolerate up to 113° of heat, while in the cervix 120° heat can be produced without discomfort. Clinically we gauge the heat produced by the hot wire milliamperemeter and can control it to the finest degree.

The clinical action of diathermic heat can be classified in four main groups:

1. Active arterial hyperemia and hyperlymphia, which increases both the local and general body metabolism. Inflammatory exudates become disintegrated, resorption is promoted. Diathermy is accordingly indicated in a very wide range of traumatic and inflammatory conditions as in sprains, strains of joints, traumatic and ordinary myositis in both acute and chronic varieties. Most forms of arthritis respond to diathermy. Complications of fractures, painful or exuberant callus, persistent edema are favorably influenced. As diathermy can be successfully localized into any of the internal organs, there is an ever widening field of its employment in pneumonia, bronchitis, pleurisy, in chronic adhesions, inflammations of the stomach, gallbladder, and the intestines. Many favorable reports have been received in gynecological conditions, diseased adnexa, perimetritis and parametritis, as well as in inflammations of the male organs, prostatitis, epidydimitis. Eye, ear, nose, and throat men are becoming increasingly interested in the possibilities of the penetrating heat effects of diathermy.

2. Local relief of pain is the second main action of diathermy and this is likewise infinitely more pronounced than the sedative action of the more superficial forms of heat application. This can be explained by the deeper action on all nerve endings of the affected area. Many forms of neuralgia, myalgia, arthralgia, yield favorably. On the other hand in cases of referred pain diathermy will be disappointing. The analgesic action adds to the favorable influence of hyperemia in many acute inflammations. Attacks of angina pectoris have been rapidly relieved, the insomnia of neurasthenics, the lancinating pains of tabetics benefitted.

3. Antispasmodic action (specially emphasized by Kowarschik and de Kraft) which is specific to diathermy in contrast to the irritating action of the other electrical modalities. De Kraft states that fibrillary contractions of muscle fibres in the very early state of peripheral paralysis can be arrested. Spastic conditions of the stomach, intestines, gallbladder can be promptly relieved. Even in apparently hopeless conditions as sclerosis multiplex, there are authentic reports in both foreign and American literature as to the beneficial action of diathermy.

4. The bactericidal action. There is evidence both experimental and clinical that the virulence of bacteriæ, especially of gonococci and pneumococci, in living tissues are markedly diminished after diathermy. Adding to this the unquestionable raising of the local resistance through hyperemia, the brilliant results of Cumberbatch in all forms of gonococcel infection are explained.

MONOPOLAR APPLICATIONS

If the voltage or tension of the high frequency current is further stepped up by an extra solenoid, and this current is tapped off on the special Oudin terminal of the diathermy machine, vacuum or non-vacuum (condenser) glass electrodes will be activated. From the distal surface of the glass, electrical charges are induced which can be applied to any part of the body monopolarly (the indifferent electrode in this case being the ground). Real surface heat is developed especially under the metal lined condenser type of electrode, and this can be utilized by treating mucous surfaces. Application with these electrodes can also be made more penetrating if used bipolarly; the active electrode is connected to one diathermy terminal and an indifferent electrode is passed against the opposite surface of the body and connected to the other diathermy terminal. Sinus affections, intranasal conditions can be thus treated efficiently. Monopolar high frequency applications can be used with benefit in superficial neuralgias, mild forms of neuritis, subacute forms of polyarthritis.

In drug stores and hardware stores, a cheap alternating current apparatus is being sold the country over under the name of violet ray machines. This current will light up glass electrodes, naturally their violet color has nothing to do with ultraviolet rays and all their therapeutic action amounts to is a mild skin irritation and gentle massage, as any ordinary liniment would do.

SURGICAL DIATHERMY

The employment of diathermy as a destructive agent has a very wide field. The aim of surgical diathermy is to produce a varying amount of electrical heat either for the drying up (dehydration) or carbonization (fulguration) or complete termoelectric coagulation of the tissues. This latter method should not be confounded with tissue destruction by the actual cautery, because in diathermic destruction the tissues are not burnt, but are coagulated and on account of the firm plugging of bloodvessels there is an absence of hemorrhage at the operation and danger of a subsequent secondary hemorrhage. With experience the depth of the coagulation can be regulated by the volume of current used and the length of the application.

Dehydration is accomplished by the monopolar application of the mild amount of high frequency current through a steel needle into the tissues with the effect that the tissue fluids slowly evaporate and the area treated converts into a dry mass. This is an ideal method for the treatment of superficial and benign blemishes of the skin and mucous membranes, as warts, naevi, moles, leucoplakias, and other conditions, with perfect cosmetic result.

Fulguration is the sparking of the tissues by monopolar application, causing a superficial cauterization from without in contrast to the dehydration from within in the former method. This cauterization, however, prevents the deeper penetration of the Oudin current and necessitates the curettage of the carbonized tissue if a deeper heat effect is desired. Some forms of benign growths may be treated by this method which was so enthusiastically proposed by de Keating-Hart fifteen years ago.

Finally electrocoagulation is the method whereby a heavy bipolar current is employed and a very penetrating and immediately destructive current is employed. An active electrode with a needle point or a flat disk is placed against the tissue to be coagulated and an inactive electrode is placed somewhere on the body insuring a direct line of current. The heat produced comes from within and with sufficient experience can be made to act to great depths. Malignant growths at any location, when accessible and not involving vital structures, can be attacked successfully by this method and its range application offers a still widening field in replacing cutting operations. The main advantages for applying high frequency currents for the destruction of malignancy, according to Plank, are: 1. The operation is bloodless. 2. Much less time is required. 3. There is very little shock. 4. There is a minimum of trauma. 5. The danger of metastasis is reduced to a minimum. 6. Postoperatively there is very little pain, reaction edema or toxemia. 7. Resulting scars are soft and pliable. 8. There is perfect control to an area as small as a needlepoint. 9. Results are better than with cutting operations.

The technic of the various methods of diathermy can be learned only by actual work under an experienced teacher. After having acquired sufficient working knowledge of the same, the only limit to the successful application of diathermy is the resourcefulness of the operator and his conception of the pathological condition in the individual case.

223 East Sixty-eighth Street.

The Treatment of Birthmarks by Physical Agents

JOSEPH JORDAN ELLER, M.D.

New York

Physiotherapy in some form plays the greatest rôle at present in the treatment and eradication of birthmarks. The older methods of therapy, such as excision, vaccination at the site of the nevus, injections of boiling water, the application of nitric acid and the treatment by hot air, have been replaced by methods which are more under control of the therapeutist and which uniformly give much better results than the older methods. Today, the following physiotherapeutic measures are used, namely, electrolysis, trichloracetic acid applications, x rays, radium, carbon dioxide snow, Kromayer light, and surgical endothermy (electrodesiccation and electrocoagulation).

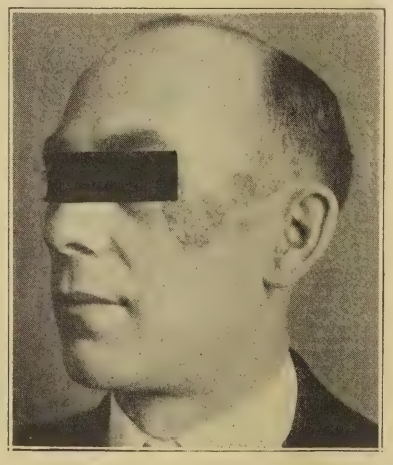


Fig. 1.—Port wine mark before combined Kromayer light treatment and carbon dioxide snow.

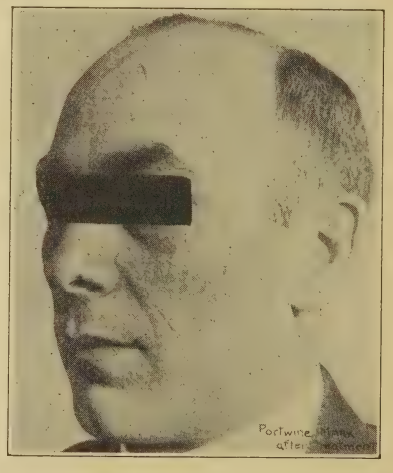


Fig. 2.—Port wine mark after combined treatment with the Kromayer light followed by carbon dioxide snow.

PIGMENTED NEVI

Brown pigmented nevus without hair.—This type of lesion varies in size from a pinhead to a quarter or larger. It is usually slightly raised above the level of the skin. Carbon dioxide snow gives the best cosmetic results for the larger marks and the application of trichloracetic acid at proper intervals is the method of choice for the small moles. Electrodesiccation is used for the removal of hairless brown nevi but with this agent there is apt to be more scarring than with either of the previous two.

Brown pigmented nevus with hair.—The hairs must first be removed by means of electrolysis. At this point I wish to warn against the removal of the hairs by means of x rays. This method has been used in some of the clinics, following which epilation, the pigmented mole was treated with snow, acid applications or endothermy, and bad scarring resulted and often with a return of the hairs. Quite frequently after the removal of the hairs by electrolysis the lesion disappears without further treatment. Should any of the pigment remain it is readily removed with applications of carbon dioxide snow or trichloracetic acid. Electrodesiccation is not used for the reason given above. X ray or radium irradiation is contraindicated and, in my experience, does not act well on pigment.

Black pigmented mole without hair.—This lesion is usually bluish black, having no hair and often shiny. It invariably is a dormant melanotic cancer and should be treated as such. If it is in an area not subject to irritation and it does not show any sign of growth, no treatment is advised. On the other hand, should there be an indication for removal, only the most radical treatment should be undertaken. Any conservative treatment will result in a general metastasis

and death within a short time. The best results are obtained by removing the lesion without disturbing or touching it. This can best be done by the use of the endotherm knife circling wide for at least half an inch outward from the lesion, or even an inch if the lesion shows signs of growth, and then cutting down for a half inch or more underneath, removing this whole mass of tissue with the mole intact. A day later radium heavily filtered is applied to the treated site as well as to the glands which drain the affected area. I have a few cases under observation which had been treated by the latter method described above and which were proved to be true melanotic moles and which have shown no sign of recurrence after two years. Despite the fact that the cosmetic result was disregarded the healthy tissue granulated so as to leave a soft smooth scar. The final outcome of these latter cases of course is not known and they will be kept under close observation. In all the other cases which I have observed and which were treated in a conservative manner, whether the lesions were growing or not, the patients died during the period of six to twelve weeks after treatment from a generalized carcinomatosis. A combination of the endotherm knife with radium and x rays gives better results than using any one of these agents alone. The endotherm knife seals the lymphatics and capillaries as it cuts and thereby lessens the chance of metastasis, while the opposite is the case with the ordinary surgical removal.

NEVUS VERRUCOSUS

This is a warty birthmark and is difficult to remove permanently. In order to do this a deep application of electrocoagulation is applied, following which the treated mass is removed with a sharp curette. X rays and radium must be given in such large doses for a permanent cure that they are both contraindicated. Carbon dioxide snow gives good results where the warts are soft and not deeply imbedded. It is always impossible to cure this nevus without more or less severe scarring by any method.

NEVUS FLAMMEUS (PORT WINE MARK)

Port wine marks are usually situated on the face and vary in size and color. They may be the size of a pea or may occupy the entire side of the face, or more. They may be pale red in color and blanch easily under diascopic pressure, or they may be dark red or bluish red and remain this color under pressure. They are never elevated above the surface of the skin. X rays and radium are absolutely contraindicated in the treatment of this condition. In order to cause their removal with this type of irradiation, whether with filters or not, unsightly scarring is always the result with more or less atrophy, keratoses, and pigmentation, and later the growth of epitheliomas.

Epitheliomas following x ray or radium burns are always of the metastatic type. Wickham and Degrais, Pusey, Mackee, and others have reported very poor results in the treatment of port wine marks with x rays and radium and advise strongly against this method of therapy.

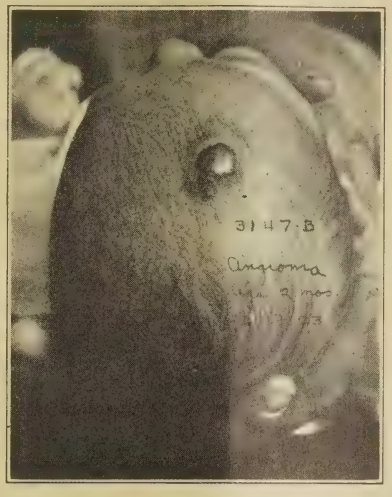


FIG. 3.—Angioma cavernosum before radium therapy.

FIG. 5.—Angioma cavernosum before radium therapy.

FIG. 4.—Angioma cavernosum cured by radium therapy.

FIG. 6.—Angioma cavernosum after radium therapy. Note return of hair on former site of nevus.

There have been demonstrations of cures by means of the use of the Kromayer light with pressure. I have used this method very carefully in twenty cases and have cured one patient, a young woman aged twenty-two years, who had a mark on the right temple about three inches in diameter which lightened under diascopic pressure showing it to be superficial. It took about a year to cause a disappearance and no scar remained.

A second port wine mark which was cured with

a good cosmetic result was on the face of a young man. The Kromayer light was used with some improvement. Later the mark was completely removed by carbon dioxide snow. In three other cases there was a slight lightening of the lesions by Kromayer light. All the others were a complete failure even though I permitted the light to be applied with great pressure under full current and for forty-five minutes to an hour at a time and causing blistering and tremendous reactions. These cases are now being treated with carbon dioxide snow and although there is slight scarring, the results are gratifying and very much better than the Kromayer light.

Fig. 7.—Nevus flammeus, before treatment with carbon dioxide snow.

There is now a much improved method of applying snow. Dr. Lortat-Jacob demonstrated his method to me at the St. Louis Hospital in Paris. By an ingenious invention of his, the snow is collected in a copper chamber which chamber is directly applied to the lesions. Only the metal comes in contact with the skin, and the pressure is accurately controlled by a spring gauge. The copper applicators are made into various sizes and shapes to fit the various lesions. The snow can be collected with this device in a few seconds. I have been using this method of carbon dioxide treatment and have found it to be much superior to the old method of applying carbon dioxide snow directly. Lortat-Jacob's apparatus is a good one for port wine marks particularly and he has shown several cases cured with only very slight scarring.

STELLARY NEVUS

Electrolysis gives the best results in these cases. As a rule one treatment to the centre of the lesion, using two to three milliamperes of current and leaving the needle inserted until this area becomes blanched, will suffice to cure this condition. There is no doubt that radium in the proper doses will cure these conditions but it seems that it is better to use a simple, harmless method, such as electrolysis. The technic is fool proof and no scarring will result if used in the above manner.

ANGIOMA CAVERNOSUM

In this type of bloodvessel birthmarks, the deep vessels, especially the veins, are involved. The lesions consist of soft tumors which vary in size from a pea to a walnut and larger. The tumors may be elevated well above the surface of the skin or the elevation may be only slight. The overlying skin may be normal. They often occur on the tongue, lips, mucous surfaces of the cheeks, etc. These nevi are more common in children, the explanation for which is that such lesions often undergo a slow spontaneous involution or are cured as a result of accidental traumatism. When cured in this manner, unsightly scarring may occur, so that I advise treatment in all such cases in order to avoid this. There are various methods of treating cavernous angiomas such as: radium, carbon dioxide snow, bipolar endothermy, x rays and general surgery.

Radium is the treatment *par excellence* and gives by far the best cosmetic results. In most cases with the proper technic, no scar will remain. Occasionally in a particular obstinate lesion one may get slight wrinkling. Full strength flat applicators are suitable as a rule, using filters of two millimetres of brass, thereby cutting out all the beta rays for the deep seated angiomas, while for the more superficial type, filters of one to two millimetres of aluminum are used. The dose should be just a little less than the amount required for a first degree reaction and it may be repeated every four to six weeks. The number of treatments required will vary with the size and depth of the lesion. Radium emanation tubes may often be used (with the proper filters) to great advantage on convex surfaces such as the gum, tongue, and lips. It can be put into dental molds and made to fit the lesion exactly. Radium gives such good results and is so superior to other methods of treatment for this condition that I feel any other form of therapy is contraindicated. However, the second choice of treatment is carbon dioxide snow given with sufficient pressure and at the proper intervals. It may, however, even with the best technic leave slight scarring. The third choice of therapy is bipolar endothermy.

Fig. 8.—Nevus flammeus, after therapy with carbon dioxide snow.

NEVUS VASCULOSUS (STRAWBERRY MARK)

In this type of angioma the lesion is erythematous and is elevated slightly above the surface of the skin. The lesions involve only the superficial vessels and vary in size from a pinhead to four or five inches. They are soft in consistency and may enlarge rapidly in a few years or may undergo involution spontaneously. Radium is by far the treatment of choice in this condition using filters of one to two millimetres of aluminum.

Due to the great increase in the number of physical agents in the armamentarium of the dermatologist and to the improvement in the technic of their usage in the treatment of birthmarks, much more satisfactory cosmetic results are now obtained in the removal of nevi.

100 West Fifty-ninth Street.

Historical Medicine

A New View of the Boyhood of the Rev. Dr. Muhlenberg*

ROBERT ABBE, M.D.
New York

Dr. Abbe said that some years ago when crossing the continent, he studied the local papers of the cities en route and found in the *Omaha Bee* a novel column of advertisement called Swapper's Column.

A poor mother loses her babe and needs a sewing machine: She offers to swap her baby carriage.

A man has a good dog, he offers to swap with some one who has a canary which his wife wants.

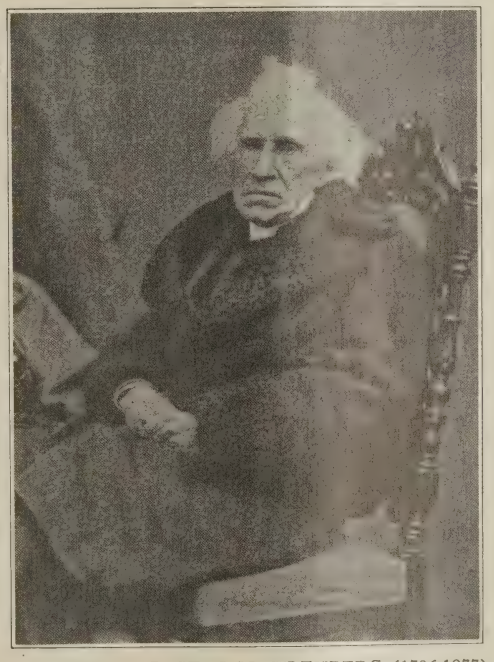
A surgeon offered his instruments and books, as he says, "for a shotgun, or something I can use."

So, since I have ceased using the scalpel, at our hospital, I find other interesting things that I can use like the doctor's "shotgun."

The executor of his estate has sent me a package of thirty letters, yellow with age, neatly folded, and each marked by the hand of Prof. George B. Wood, of Philadelphia, with the date and name of his friend, William Augustus Muhlenberg. A hundred years old were these new found letters.

The two boys, Wood and Muhlenberg, were students together at the University of Pennsylvania. Neither one had a dearer or more intimate chum; a boy's intimacy began then, when boys open their hearts to each other, which lasted until death.

Wood became the distinguished professor of materia medica of the University of Pennsylvania, author of many writings, but above all, the author of the great *United States Dispensatory,* continually enlarged from its first edition in 1833 to its twentieth edition now universally used—a heavy volume resembling the latest New York City Directory.



WILLIAM AUGUSTUS MUHLENBERG (1796-1877)
As the House Staff of St. Luke's knew him from 1858-1877

Prof. George B. Wood, Jr., succeeded his father in editing the later editions. I have brought the first and last editions of this monumental work for you to see tonight.

Muhlenberg became the divinity student, curate, pastor of three churches—founder of the Church of the Holy Communion in this city and of St. Luke's Hospital.

The letters would be of little interest did they not reveal the struggling efforts of a representative man, of a type commanding our sympathy, respect, admiration and love—aiming to live a consistently useful life—a hopeful, fearless, consecrated, and I might almost say, lonely life, carry high a banner which he would place on some unseen rampart, revealed only as Time unfolded his career.

Most of the living alumni of St. Luke's never saw this saint, the Rev. Dr. Muhlenberg. It was my privilege to live three years with him in old St. Luke's, and these letters give me a new glimpse into his boyhood which will interest you as it has me.

Many of us are starting our careers. Some are ending them. Go back with me a century, and see if we can discover in these letters the factors in his early career which carried him to the high position he attained. We see him, as a boy, keeping a diary, as was the custom of the gentlemen of those days, and this he continued till his death.

How much interest always attaches to the prompt recording of the incidents of any day of one's life, and the thoughts called out by them! Rereading of them recalls a vast store of otherwise forgotten experiences, and forms a fine foundation for the resources of social conversation now, almost a lost art, in these days of newspapers.

These old letters are like a bit of his diary. They tell something of the news of the day. The first letter, for instance, was from the student Muhlenberg, in Philadelphia, in 1817, to student Wood, taking a vacation in New Jersey. Letters went by saddle and stage coach, in two or three days for ten pence or a shilling, paid in coin, for there were no postage stamps then. It tells of a rumor current in Philadelphia that "Napoleon had escaped from St. Helena in a hogshead—on an American vessel."

Imagine the long three or four weeks' delay before this rumor could be denied! Sailing vessels—were the only news carriers to Europe. Even as late as 1864, in our Civil War, the news of the decisive battle that ended the rebellion was so important, that the Inman Line dispatched a special steamer to carry the news quickly to England. There was no Atlantic Cable until 1866.

These young college boys were one day bitten with the journalistic furor, and partly to help pay expenses, invited the best Philadelphia families to subscribe to *their* newspaper. A printed invitation with alluring promises (and a subscription card to be

*Notes of address to St. Luke's Alumni, May, 1922.

called for later) was left, by hand, at the door of every self respecting householder. After a few days the youthful editors had two responses, and later, Muhlenberg writes Wood that "the Committee have but 175 subscriptions, that not a word has been written of any of the articles to appear in it," and he fears "it will never see the light"—which it never did.

Later, divinity student Muhlenberg writes to medical student Wood to prescribe for his disease, laziness, by return mail. Again, he bemoans his apparent lack of "evident sanctity" in the profession he is preparing to follow, but assures "Dear George" that he is "anything but a hypocrite." Like many a student, he makes a lengthy analysis of his own character—"alternately melancholy and exalted." He writes: "I would as often die as live, for the prospect of a blissful heaven."

Again, how like his old self, as I knew him at eighty years, excusing faults in others, and condemning himself, for writing of their "Classmate A. ——", whom he denounces, and then, "regrets sending such a dirty letter, to such a nice correspondent," and asking Wood to "burn it up." I've no doubt "Classmate A. ——" deserved the scathing criticism.

How human is a line to his chum Wood from Philadelphia in August, 1817, that it is "much too hot to study!"

His next letter is full of pathos. "How fortunate," he says, "that I came back to Philadelphia," for the next morning his grandmother expired. He writes: "Although we had been in long expectation of the event, and used to talk with calmness about it, *when it happened,* it affected us all greatly" . . . "I never before saw a person die," he writes. "It is truly an awful sight, even in one run down by sickness and old age. How much more melancholy it must be in blooming youth cut down in the midst of health."

His experiences with the Great Reaper, which his hospital function caused to accumulate in later life, now were initiated, as shown in this same fine letter. "I have just heard," he continues, "of the death of the Right Rev. Dr. Dehon, Bishop of South Carolina. He died suddenly of bilious fever. He was one of the most beautiful men I have ever seen. He was thought, when in Philadelphia four years ago, very much to resemble Henry Rawle. He had Henry's eye, and something of his features, but his complexion was much more florid. In the pulpit, in his episcopal robes, his appearance was something more than human. His voice was music to the ears, and his style of writing accommodated to his manner. The cadence of his sentences was melodious and full. The Church of South Carolina has lost one of the highest lights of the sanctuary, and the circle of society in which he moved an inestimable and brilliant member. He was a man of fervent piety and fine genius. He was not forty, when he died." "Forgive me, George, forgive me," he writes, "my feelings have led me into fields into which you have unwillingly followed me. The news of the Bishop's death, being so fresh upon my mind, together with my respect for his character, and admiration for his person, plead my apology."

I have made this extract from this letter to Wood because it brings to my mind an incident, more than half a century later, when with Dr. Muhlenberg in a room in the dear old hospital, I stood by the death bed of another beloved Bishop of the Church, Bishop Armitage, who died shortly after I entered as an intern.

It was the first death I had ever witnessed. Dr. Muhlenberg must have seen a thousand since his grandmother's death. My emotions were intense. My eyes were wet, as the last breath was drawn and the overwhelming silence followed. My impressionable young mind asked, "Where is the soul, released but now! Open the window, and let it out." The scene is as vivid as if it were but yesterday. Yet the venerable saint standing by my side, dry eyed, and without visible emotion, compressed his lips and, dressed as he always was in his long purple dressing gown and slippers, quietly shuffled out of the room, down the hospital corridor, to his room, where, I doubt not, he uttered a prayer, *alone.*

In August, 1818, we find him on a vacation, in Bethlehem, Pennsylvania, among that unique settlement of German refugees, already a century old, who continue even today their annual musical festival. He writes of these "remarkable religious and musical people, where all orchestral music was played in schools and churches by the people, who were like Quakers in their simplicity." Dr. Muhlenberg's love of fine church music, of chorals, of Bach, of Gregorian chants, must have been an innate appreciation.

A little later we find him preaching in Lancaster, his first parish. With characteristic humility and self analysis he writes his "dear friend": "My irresolution and want of method are prominent traits of my character." One often sees this inward suffering revealed when men are working toward some great goal. In this parish he "finds the town full of gossips," and says, "I have to be very circumspect myself." Then, in serious vein, he opens his heart to his friend—his first talk on the doctor's attitude to the church—and ends by promising him "another sermon."

Here begins an evident entering wedge that develops in the friendship of these two admiring souls. It is typical of life. Two equally noble spirits, each bearing a manner "Excelsior." Through the same rift in the clouds, one sees only the vision of the Heaven of religious thought; the other, the intellectual and scientific progress away from dogma; both equally moral and noble. The religious devotee, suffering inward torture of his soul, praying to bring his loved friend to see the light as he sees it.

Six months later, Dr. Muhlenberg writes a long and intimate letter expressing "the grave and serious task he is in for as rector." Then he expounds the Scripture, and gives his "Dear George" another dose of theology, coupled with that yearning love which would bring them both to think as Muhlenberg's conviction led him to think.

We have no record of Wood's answers to these letters, which were sacredly kept, folded and filed, with Muhlenberg's name and the date of reception. So orderly was it all, that it implies the deep respect Wood had for this young Pastor. I have little doubt that a kindly and tactful, but unconvinced, reply, was sent.

These letters, mellow with age, and running over thirty years, we may read with respectful analysis. There is evidently a widening breach in the warmth

of correspondence, and though Muhlenberg ceases to speak of religion, the letters become semiannual and less confidential. This abatement of ardor for converting his "Dear George" measures up to his later liberal toleration for indivdual thought, but he yields not one jot of his conviction of the full measure of Christian supremacy. If he suffered defeat in this cherished venture, while his heart ached, he vaunted no superior claim. He simply restrained himself. That attitude is a reserved privilege of all broad-minded clericals.

I recall one beautiful illustration of this sense of defeat which happened to Dr. Muhlenberg while I was house surgeon in 1876. One of the outstanding figures in the world was Charles Bradlaugh, the great agitator in English and Irish politics, a member of the House of Commons with Gladstone, and a thorn in the side of the British Government. He visited our country to spread broadcast his liberal views. He was taken ill at his hotel in New York and brought to St. Luke's Hospital, then on 54th street and Fifth Avenue, the site of the present University Club. The chill and high fever developed pneumonia. With characteristic bravado this powerful man refused to go into a private room, as he boasted he "had always shared hardship of barrack life with his people, and the ward was good enough for him." We put him in a ward. In two hours Bradlaugh had had enough of it, and as he bid fair to go out of his mind, I put him in a large room next to Dr. Muhlenberg. I found him full of interest and character and grew quite fond of him during the month he was under my care. Dr. Muhlenberg took the first opportunity during convalescence to visit him, as was his habit, and ventured a little missionary work, which was not resented but met with intelligent and forceful argument. After one or two visits Dr. Muhlenberg gave it up. The atheist was too strong for him. Dr. Muhlenberg never lost heart; he had fulfilled his duty and cleared his conscience.

About that time one of our brilliant surgeons, Dr. Tom Sabine, whom everyone knew as a son of the Reverend Dr. Sabine and a scholarly atheist, fell sick and died of tuberculosis. Everybody loved him. One of his father's sympathizing parishioners asked the father if he didn't feel dreadfully about his son's irreligion. "Oh, no!" he said, "the good Lord will take care of Tom." That was the attitude of Dr. Muhlenberg.

In January, 1822 (exactly a century ago) Muhlenberg, the young, lonely curate in Lancaster, writes, "Dear George, more than ever I need a friend to talk to. There are good women a plenty and I enjoy them, but *men* are few."

From that period of Dr. Muhlenberg's life we begin to see the development of his idea of the crying need of our country for education of the people by the state. In this letter he narrates his appeal to the Pennsylvania Legislature to extend educational methods to public schools for the poor. It is not easy for us, today, to realize that a century ago State education was almost unknown. Our public school system is one of the monumental growths of our unique democratic civilization. We see Dr. Muhlenberg's one unalloyed principle of life was service to the brotherhood of man.

In the next letter, three months later, "Dear George" gets a homily on human weakness, phrenology, and "Cracked brains." And, following this, a copy of *Butler's Analogy* for him to read, hoping it will "soak in"; then, a little more preaching, trying to nail it. It evidently had little effect. "Dear George" has been more interested in social pleasures and, at the same time, announces his marriage engagement. This surprise sweeps Dr. Muhlenberg off his feet, and he writes Dr. Wood, asking, in a most naive way, "How, now, do you view your other female friends?" He says, "Your eye no longer wanders." Many apologies he gives for not warmly congratulating Wood, "as he does not know the lady." How Wood received this awkward compliment we do not know, but, the engagement being made public, Dr. Muhlenberg writes a dear letter "claiming the honor of tying the indissoluble knot by virtue of ancient contract." "Hymen," he writes, "is to complete what the little blind boy has so successfully begun."

We can imagine the solitude in which Dr. Muhlenberg was steeped after this. There was no *estrangement*, only the *contrast*.

His next letter, three months later, is full of sadness. We can read between the lines. He writes regretting "he cannot come to the wedding," and continues, "The bright prospects of my friend, I contemplate with heartfelt pleasure, from amidst the dark and melancholy gloom with which my own are shrouded." How dramatic that moment in his isolated but beautiful self abnegation! A line from Hamlet could not speak more strongly.

Three years intervene ere the next letter. Muhlenberg tries to be cheerful and gossip about his people, but lapses sadly, and recommends Wood to "read" *Dwight's Theology* "every Sunday."

Two months later, he probably had had an answer, as he writes "regretting the tone of his previous letter" and evidently tries to be more cordial.

Four weeks later his letter is long and full of news but entirely in poetic form, which can only be explained as a salve and comfort to his own soul, and giving a restorative lift to old friendship, which had been cast down of late.

Seven years now elapse during which, if any letters were written, Wood did not keep them.

Then Muhlenberg writes two letters without the affectionate touch of old, and taking occasion to note the public announcement of "the gift of the enormous sum of $2,000,000 to found Girard College to the exclusion of any theology." This stirs our dear pastor to call it "an Unchristian Act."

Three years now elapse and Muhlenberg is settled in a new parish at Flushing, where he feels joy at expecting a visit from Wood.

Another year passes and Dr. Muhlenberg and his brother, F. A. Muhlenberg, write to ask Wood, then professor at the University, to recommend "a fine physician to fill an expected vacancy among the Flushing doctors, to be also professor of chemistry, minerals, and practice of medicine, and to expect an income of $2,500 professionally, and $500 salary, charging something for the good will of the man getting out." This was the first step in founding the Flushing Institute, the future St. Paul's College, the first church college for education for the Ministry.

After another long interval Muhlenberg writes Wood that he hopes, "if ever I become a great man, no one will publish my letters, as thereby, anyone would discover procrastination is my besetting sin." He writes, "As Cicero had, for his speeches, a common introduction, so I have, for my letters, an apology for not writing sooner."

The last three letters in 1838 pertain to Muhlenberg's great scheme to establish St. Paul's College, the first church college in this country, and to get money for it, by loans and gifts.

* * * *

How like a stage scene the curtain rises on this first act—the boyhood life of a heroic figure, whose later career as an educator, humanitarian, and founder of St. Luke's Hospital is well known.

The affection of these two souls never cooled or died out. A year before Muhlenberg's death, Wood, also an old man over eighty, visited him.

Muhlenberg writes in his diary, "Wood was the best scholar of his class." Again he writes, "How much better and wiser I have grown." Again, "God alone knows how I agonize, in prayer, to be useful."

Some of his aphorisms, born of experience, are as good as Franklin's trite sayings. He writes, "Never, if you can help it, tell bad news, at night."

All these letters antedate by a dozen years his settling in New York, and laboring to found our hospital in 1852.

It has been delightful to me, to get this glimpse into an early period of a life which, by the inevitable law of evolution, eventuated in the masterly character of William Augustus Muhlenberg.

He made a marked impression on the growth of the great Episcopal Church in our country.

He was not only the founder of our beloved Hospital but—as Bishop Lawrence of Massachusetts wrote me a few days ago "was one of the few real prophets of our church in the first century—indeed—a unique prophet—and when we have not followed him we have gone wrong."

These introspective letters of boyhood, read in the light of his subsequent life, show that he was neither "lazy," "procrastinating" nor "melancholy" but always in a mood of spiritual exaltation.

40 West Fifty-ninth Street.

Leonardo Da Vinci, Anatomist and Physiologist

LEOPOLD VACCARO, M.D.
Philadelphia, Pa.

(*Concluded from page* 569)

The Madonna sits in the midst of a great classical ruin; and in the intense dramatic action of the worshippers and the crowds endeavoring to approach, the author has surpassed the highest achievements in the Early Renaissance. Of the other works ascribed to this youthful period none seems genuine except St. Jerome (Vatican), a fine anatomical study. The small Madonna del Fiore in the hermitage St. Petersburg, is after Leonardo's design, but Berenson attributes to him an unfinished profile of a girl, in possession of Donna Laura Mingnetti at Rome.

Leonardo first visited Milan about 1482-83, as the bearer of a present from Lorenzo dei Medici, to Lodo vico il Moro, the reigning Duke. His present was a strange musical instrument sounding like a lute, and invented by Leonardo himself, who thus sang his way into the Duke's favor. Among the artist's papers is the brief of a curious letter which he wrote to the Duke after his return to Florence, stating his various accomplishments. None of the ten divisions of his letter are devoted to his abilities as a military and civil engineer; and in the last he states his prowess in architecture and in sculpture. "In painting also, I can do what may be done, as well as any other, be he who he may." The earliest documentary evidence of Leonardo's presence in Milan dates from April 25, 1483, and he remained there until his patron was driven from the city by the French in 1499. This was the most fruitful period of Leonardo's activity.

His work in Milan was important and varied, as a sort of general factotum for the ruler; he was principal engineer in his numerous military enterprises, constructed the Martesana Canal, and directed great festivities, as when Lodovico married his niece to Emperor Maximilian. He was also active as architect, being one of those employed upon the Cathedral of Milan, and he probably designed other public buildings. He found time to prosecute his studies in anatomy especially in animals, with Marco della Torre, and to assist Luca Pacioli in one of his mathematical works. At the same time he was at the head of a large band of pupils; whether or not they constituted the supposed Milanese Academy for them, he wrote the *Treatise on Painting;* and it is certain he designed paintings which they carried out. The artistic task in which Leonardo took chief interest and indeed the dearest plan of his life, was the colossal bronze monument to Francesco Sforza, the father of Lodovico. On it he labored constantly till his departure from Milan in 1499, without having brought it to completion. His interest is attested by the numerous studies of horses, in all manners of positions, in sketches for the monument and reliefs in wax and clay. The model for the horse, twenty-six and a half feet high, was completed when the French occupied Milan in 1500, and formed a target for the Gascon archers. Had Leonardo completed this monument it probably would have ranked as the greatest equestrian statue of the Renaissance, surpassing Verrocchio's Colleone as far as the latter did Donatello's Gattemelata.

Of his paintings during the early Milan period the most important panel is the known Virgin of the Grotto in the Louvre, executed for the Confraternita

della Concerione (1482-90). In this Leonardo has finally solved the problem of chiaroscuro in the striking contrast of the faces of the Virgin and the two children in the darkness of the grotto. From 1494 to 1497 Leonardo labored on his masterpiece, The Last Supper, a wall decoration in the refectory of the Monastery of Santa Maria delle Grarie Milan. Because of his use of tempera colors directly upon the wall, a surface unfit for the purpose, and because of neglect and vandalism of monks and soldiers the grand original was reduced to a ruin.

All of the other pictures painted by Leonardo during this period has been lost.

In December, 1499, after the expulsion of Duke Lodovico, Leonardo left Milan for Venice. To a brief sojourn at Mantua we owe two beautiful drawings of Isabella d'Este (Louvre and Uffizzi) though he never painted for her the desired portrait. He remained at Venice till about 1500, when he retired to Florence and assiduously devoted himself to the study of mathematics.

In 1502 Leonardo entered the service of Cesare Borgia as a military engineer rendering important services in the different parts of Central Italy.

When the French temporarily abandoned Milan in 1513 Leonardo paid a visit to Rome. In 1516 he returned to Milan. He was made court painter at a salary of 700 gold scudi annually, besides being confirmed in his previous possessions. By order of Francis I he bought up all his own pictures that could be had whence the collection of the Louvre, and the same year he accompanied the King to France. He passed the remainder of his days in the residence assigned him in Castle Claux, devoted to scientific research and died there soon after the date of his testament, May 2, 1519. He died in the presence of his friend, Melzi, who had been his constant companion the latter part of his life, and to whom he left his invaluable manuscripts and his various instruments.

Leonardo was the most extraordinarily versatile genius of that age of geniuses, The Renaissance. As a man of science, he towered above all his contemporaries, and had his views been known and generally published, they must have revolutionized the science of his day. That they were not known is perhaps due to the fact that his manuscripts were almost undecipherable, being written with the left hand, backhanded and from right to left. With an almost inspired glance he divided the secrets of Nature, making discoveries which it has been reserved for our own time to perfect. A consummate master of anatomy, he even divided the circulation of the blood and the action of the eye in vision. He made astounding observations in meteorology. Knew the earth's annual motion and the effect of the moon upon the tides; foreshadowed the hypotheses of the elevation of continents, and discovered the nature of fossil shells. He originated the science of hydraulics, and probably invented the hydrometer; his schemes for the canalization of rivers is still of practical value. He invented a large number of labor saving machines, very remarkable for his day, and as a mathematician he takes high rank especially for his study of spirals.

In the art of painting he wielded the greatest influence. He was the pioneer of the High Renaissance, the first to achieve that complete mastery of form and technic which admitted of a new freedom of handling a new truth to Nature and life. He was the first to attain a sound and complete mastery of anatomy and to introduce color in the highest sense, into Florentine paintings. By the use of sfumato a smoky, hazy quality—he achieved a remarkable melting tone and blending of color, he was the first great master of light and shade, which he made witching and lovely. His drawings reveal the consummate draftsman seeking rather after finesse than general effect. They may be found in that principal European collection, especially at Windsor. Among the principal are the studies of his principal paintings such as the *Kneeling Leda* (Chatswortly and Ducat Palace, Weimar), *Neptune Driving His Team, The Battle of the Standard, The Last Tuffe,* the magnificent head of Leonardo in old age (Royal Library, Torino) and the large series of caricatures in which he displays a remarkable sense of humor. Especially characteristic of Leonardo's art are his landscape backgrounds, into which he was among the first to introduce atmosphere and perspective, that mysterious quality which heightens most admirably the effect of the picture and the subtle mysterious smile which Vasari has characterized as more than human. The influence which he wielded over Italian art was profound and sound. The chief masters of the High Renaissance in Florence—like Raphael—Andrea del Parto and Bartolomeo—all learned from him and transformed the School of Milan.

This peerless painter, sculptor, architect, engineer, mathematician, astronomer, meteorologist, musician, poet, inventor and philosopher was simultaneously a preeminent master anatomist and physiologist "the most richly gifted among all the sons of men" from that rich land of geniuses: Italy.

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1917 South Broad Street.

Bismuth Poisoning Following Oral Administration of Bismuth Subnitrate.—William H. Resnik (*Bulletin of the Johns Hopkins Hospital,* May, 1926) reports a case of bismuth poisoning in a colored woman of thirty-five years following administration of bismuth subnitrate by mouth. The important symptoms described were a bluish-black discoloration of the gums, tongue, and buccal mucosa, with slight ulceration, moderate anemia, basophilic stippling of the red blood cells, with tenderness and swelling of the parotid glands. There were also abdominal colic and evidences of a mild peripheral neuritis, but the dependence of these symptoms on bismuth poisoning is questionable. The general picture resembled very closely that due to lead poisoning. The patient recovered.

Editorial Articles

SUPERSTITIOUS SURVIVALS IN SURGERY

Science moves, but slowly, slowly, and with many halts where are entrenched superstition, magic, ignorance and emotional repressions. We have progressed a bit beyond the days when a drug was supposed to produce good red blood because itself was red or to act on the uterus because its shape resembled that organ, but we still see survivals of mysticism in medicine and even in its supposedly scientific sister, surgery. The difference is that now we bolster up our magic by statistics.

In the realm of antisepsis, one would suppose, we would find no room for the emotional element. Surely here it is a question of finding those agents which destroy germ life and are comparatively innocuous to living tissues. But this is only partly true.

About a score of years ago everyone worshipped at the shrine of the great god, iodine. Every cut was soused with iodine, chests were painted with it for pleurisy, painful joints were bathed in it, and surgeons recommended painting the hands and arms with it before operating as a complete precaution, obviating other antiseptics and rubber gloves. Emergency hospitals used gallons of it daily and many interns were solemnly taught that if they applied iodine to every wound they would never have an infection. Well, iodine was and is a useful drug, but surely not as omnipotent as was held in some quarters. In fact, the suspicion gradually took form that its popularity was due, in part at least, to its pungent smell and striking color.

And now a new antiseptic idol has arisen: mercurochrome. Walking through the wards nowadays one gets the impression of a Turner sunset. Everywhere are splotches of vermilion. Here a sprain, there a laceration and in the other place an eruption, all are daubed with scarlet. The psychic effect is no doubt good. The intern feels that he has done something effective and the patient is impressed with the sanguinary effect. Now if one could only be sure that the average microbe has a well developed artistic sense and is not suffering from daltonism. On the other hand, we cannot be sure but that these miserable organisms are so lost to all chromatic sensibilities as to be entirely indifferent to anything but their own sadistic desires.

Iodine and mercurochrome do not exhaust the list, by any means, although they have had the largest number of worshippers. There have been other brightly colored antiseptics which have made their transient bids for the surgeon's favor as Harding blue did yesterday for that of his wife and Chanel red today. Picric acid had its followers for a while, but perhaps the unconscious associations with yellow were such that its vogue was fleeting. For a while also methylene blue had its admirers, but one hesitates to say that this drug reminded any scientist of youthful indiscretions. At any rate, it was dropped. And then for a while the passionate purple of potassium permanganate was the thing. Enthusiasts recommended its use in all strengths from one to ten thousand to the pure crystals. It too passed on.

And now in some quarters the suspicion is gaining ground that there is no antiseptic which is magic in its effects, that pungent aromas and brilliant hues have but little to do with therapy. Among the more scientific surgeons there has grown up a sort of indifference, as it were, to color schemes, a conviction that rigid asepsis is the thing after all, and that when a possibly infected wound is treated with any antiseptic whatever, there is no guarantee that sterilization is complete.

And so step by step we are emerging from the romantic past of medicine into the practical present. We lose perhaps some color in so doing, but then we can always escape from a too drab reality via the neighborhood movie.

THE TREND OF MEDICAL PRACTICE

That the mode of medical practice is changing is so obvious that all are agreed on the point. In former editorials attention has been called to the fact that concentration on specialism and group practice has altered already and is altering the methods of medical practice hitherto in vogue in this country. At last year's meeting of the American College of Surgeons at Philadelphia, the address of the president, Dr. Matas, presented the situation clearly from this point of view. His address was dealt with editorially in this journal.

At the meeting of the British Medical Association at Nottingham the presidential address by Mr. R. G. Hogarth discussed another aspect of the changing conditions of medical practice, that of preventive medicine, which seems as if it would be the medicine of the future in Great Britain. He urged that the efforts to promote good health and to increase the span of life should be directed to the raising of the standard of fitness throughout the whole community. And the statement no doubt means that by the scientific practice of preventive measures, personal and domestic hygiene, good housing and so on, the chronic diseases which are the bane of modern civili-

zation shall be either nipped in the bud or by judicious treatment robbed of much of their power for evil. Allowing that preventive medicine will be largely the practice of the future, then by what agencies shall this form of practice be most efficaciously conducted both for the benefit of the community and of the doctor?

Mr. Hogarth sketches the possible or probable future of medical practice as the exposition of a benevolent state socialism in which, of course, the doctors play the parts of educators of the public in the leading principles of preventive medicine and who also are chiefly responsible for the proper application of these principles. He holds that if preventive medicine is to have full sway, it must be one of the paramount duties of the State to concern itself more and more intimately with the health of the nation. He truly avers that while the science of medicine used to be mainly empirical and the causes of disease were either unknown or wrongly attributed, preventive measures by the State were little thought of.

But in Great Britain changes have taken and are taking place in this direction with regularity. One straw which shows plainly which way the wind is blowing is the long series of public health acts and the creation of the Ministry of Health; these happenings, as Mr. Hogarth says, "attest the full recognition and acceptance by the State of this essential administrative function." Moreover, he adds that in Great Britain the right of the State and of the public authority to invade this particular domain is no longer challenged. We are now accustomed to the need for efficient drainage for a pure water supply and for a reasonably pure milk supply. By the scientifically intelligent application of such measures big epidemics, with the exception of influenza, are in civilized countries occurrences of the past. And it now remains to grapple with the chronic and certain of the acute diseases by as vigorous an application of the principles of personal and domestic hygiene, industrial hygiene and healthy environment generally as the application of public health measures have been applied. Also it may be predicted with as great hope of success. As Mr. Hogarth states, knowledge of what to do is fairly complete; the practical difficulties are connected with administration, how to deal with the borderline cases, and how to make the best use of the money at disposal, for improvements are always costly and public expenditure can only be met either out of rates or taxes. Public opinion has to be educated continuously all the time and, as said before, the chief part of this educative campaign falls within the province of the doctor.

The scope of preventive legislation is almost limitless. This remark applies to all countries, but Mr. Hogarth goes on to say that we are likely to see the State interfering, or intervening, more and more in the interests of public health. This last remark applies to Great Britain.

However, although Mr. Hogarth admits that the tenets of personal and domestic and industrial hygiene, etc., are the foundations of preventive medicine, and while he is prepared to allow that in order to carry them out to the best advantage the aid of the State must be invoked, he appears to view the entrance of the State into the field of preventive medicine with some degree of distrust and misgiving. He rather seems to be in the position of one who agrees with the general principles of State control of preventive measures because he is aware that they cannot be effectually used to the greatest advantage without the aid of the State, yet he is somewhat dubious as to the outcome. And this attitude represents, perhaps, the sentiments of the majority of the British medical profession. For instance, Mr. Hogarth refers thus to the Ministry of Health: "But now that the idol of State socialism has been set up for our worship, we may be sure that sooner or later the theorists will attempt to invest the Ministry of Health with increasingly autocratic powers, and will seek to transform the whole medical service of this country into a State service, with State hospitals, State examinations for degrees, and the State payment of doctors." In short, the handing over to the Ministry of Health of autocratic powers may be, and this is the fear, the insertion of rather more than "the thin end of the wedge" leading to State control all round, and may result in the splitting of the solid structure which has been built by individualism. It appears to be feared that State control of questions relating to health will destroy to a large extent the independence of the medical practitioner. Not longer will he be an individualist, but dominated by the State as represented by the Ministry of Health. Of course, Mr. Hogarth is right when he says that this would be a perfectly logical development in a socialist State, nor can it be pretended that such a system could not be worked. But whether it would be as efficient as the present British system, whether it would be as acceptable to the general body of the people, and whether the vastly increased cost would be repaid by equivalent advancement of medical knowledge or improvement in the public health, there is room for the gravest doubt.

At any rate, the situation in Great Britain seems to be that the character of medical practice is changing in the direction of preventive treatment rather than of carrying on the traditional methods of creative and remedial treatment, and it is thought that preventive measures cannot be pursued successfully without the aid of the State. The course of events in Great Britain from the viewpoints of the public

and the medical profession will be watched no doubt with much interest and some anxiety by their brethren in this country.

NORTH CAROLINA WARS ON MEDICAL FAKIRS

An interesting account of the successful "showing up" of what appears to be one of the most harmful of recent medical fake practitioners is published in an editorial in a late issue of *Southern Medicine and Surgery*. The writer tells us that, after careful study and observation of the evil influence of medical charlatans on public health work and consequently taxation, on human suffering, and on the efforts of the medical profession as a whole, he determined "to exert himself to make North Carolina an uncomfortable place for those who come in to tamper with the health and tap the pockets of her people, to the point of making them wish they hadn't come, and of causing them to tell the news to their motley brotherhood and sisterhood, so that all of this ilk would check North Carolina off their lists of boob states."

His first opportunity came almost immediately, when he read in a Charlotte paper that "North Carolina's healthtorium, of which Dr. Stevenson is the founder, is the realization of a twenty year ambition. It is a place for people with tired nerves or bodies who are seeking rest and *rejuvenation,* according to Dr. Stevenson. Here the *patient* may 'get back to natural foods, sunshine, outdoor living, and right thinking' the psychologist says." Not ever having heard of North Carolina's or any other "healthtorium," the writer secured an interview with its founder, "Dr. Stevenson," in which she described some of her marvellous cures, said that her institution had appointed a "consulting staff" from among the most prominent doctors of the state, that her brother was chief surgeon to the American Hospital in Paris, and that she herself was a graduate of the medical school of the University of Geneva. Soon afterwards a North Carolina Sunday paper printed a two column photograph, under which Arthur Brisbane, of the *New York American,* was quoted by the lady as having said, "God was kind when He gave to the world this radiant woman," and the further statement added: "An intimate friend of the late Sarah Bernhardt, a coworker with Pasteur, author, lecturer, and dietitian, Dr. Julie LaSalle Stevenson was called 'the Bluebird of Happiness' by Maeterlinck, the Belgian poet." Letters were sent to the chief surgeon of the American Hospital at Paris, to Arthur Brisbane, to the Medical School of the University of Paris, the *Institut Pasteur,* Maurice Maeterlinck, and the American Medical Association, citing the representations made by Dr. Julie LaSalle Stevenson. To all these inquiries came responses denying ever having heard of the lady in question, with the exception of that from the American Medical Association, which quoted data from its quackery records about a certain Julie LaSalle Stevens, who is probably the same person. It will be interesting to quote from this letter from the Bureau of Investigation of the American Medical Association: "So far as we have been able to learn, Julie LaSalle Stevens is not a physician—at least we do not find that she has ever attended any reputable medical school in this country or been licensed to practise medicine in any State in the Union." An outline follows of the data about her in the quackery records, consisting of quotations from various newspapers in Davenport, Iowa, Newark, Ohio, St. Petersburg, Florida, and an advertisement run by her in one of the "McFerrin's Health Bulletins" issued in 1925. This advertisement states that her "school for the well, where students will be taught how to guard against most diseases, is now open at 29 Fifth avenue, New York, in charge of Dr. Julie LaSalle Stevens, international authority in dietetics and nutrition for fifteen years." She asserts also that she is forming classes that will afford "dietetics courses of six lessons to physicians, nurses, teachers, business men, parents, housewives." The editorial in *Southern Medicine and Surgery* quotes in full all of the above mentioned letters and their replies.

The case was brought by the editor of the journal before a meeting of the Medical Society of the State of North Carolina, held the week after the papers carried the news of the new "healthtorium." Soon after this the Mecklenberg County Medical Society met and took action in the form of a detailed statement of facts and findings, concluded with the following resolution:

Resolved:

1. That we hold it an act prejudicial to the health of the people of the State for a newspaper to give space to claims of any one representing himself or herself as qualified to advise in matters of health, until testimonials have been carefully investigated, by direct communication when possible, and where this is impossible by calling the matter to the attention of the local medical society and hearing what evidence they may be able to present;

2. That we submit the case of "Dr. Julie LaSalle Stevenson" on the evidence adduced;

3. That we give the evidence and this action as wide publicity as is practicable; and

4. That in the interest of the physical and mental health of the people of North Carolina, we urge similar action on the part of all regular medical bodies when similar situations arise.

J. P. Kennedy, M.D.,
Secretary.

The writer concludes his editorial with the following statement, with the truth of which all of the medical profession will agree:

It is a sad commentary on a community that a smooth tongued stranger would dare come in, without credentials, represent herself as an intimate of many world renowned persons, and as having been graduated from three great universities; and a sadder one to recall that, apparently, these fraudulent representations were accepted as authentic until inquired into by doctors. Is there not need for protection? This fight is not on an individual, but on the whole system which this individual represents. . . . The desirable and desired object is to awaken doctors to the possibilities of resistance, and the intelligent portions of the general public to the duplicity and mendacity of this sample of the whole lot.

The North Carolina medical profession are to be congratulated on the definite stand taken and their quick action in this case of quackery which might have been a great danger to the health of the community if not immediately checked. Their example should be followed by other States of the Union which have not been so wise or active.

Obituary

ERNEST V. HUBBARD, M.D.

New York

Dr. Ernest V. Hubbard, who died at his residence in this city on October 24th, was born in Nashville, Tenn., in 1874. He took his medical degree at the College of Physicians and Surgeons in 1898. He was a surgeon on the staff of the Manhattan Eye, Ear and Throat Hospital, having specialized in laryngology. He was a member of the Society of Colonial Wars, the Sons of the American Revolution, the University Club, the American Laryngological, Rhinological, and Otological Society and the New York Academy of Medicine.

JOHN VAN DOREN YOUNG, M.D., F.A.C.S.

New York

Dr. John Van Doren Young, who died in New York October 25th, was born in Plainfield, New Jersey, October 3, 1864. He was the son of the late Mary J. Garrison and Dr. John Young. He came from a family of medical men, being the fourth in direct line.

Dr. Young received his early education in private and public schools and the Newburgh Academy. His medical degree was received from the College of Physicians and Surgeons, New York City, in 1888. He served as intern at St. Luke's Hospital and the New York Nursery and Childs Hospital, beginning private practice in 1890 in New York city, which he continued until his death.

Early in his career he devoted his energies to the study of gynecology and later became a specialist in this line, devoting much of his time to obstetrics also. The combining of these two specialties he deemed necessary to the mastering of either.

He was attending gynecologist to St. Elizabeth's Hospital, professor of clinical gynecology to the Polyclinic School and Hospital, consulting gynecologist to the Hackensack Hospital.

He was greatly interested in organization of medical men for their own protection and the advancement of the Profession. The Medical Society of the County of New York was his greatest interest, he having served this organization eighteen and a half years as its secretary. He was also secretary of the Physicians Mutual Aid Association for fourteen years.

He was a Fellow of the American College of Surgeons, the New York Academy of Medicine, the New York Obstetrical Society, a member of the County and State Societies and the American Medical Association, the Alumni Society of St. Luke's Hospital, the Medicosurgical Society, of which he was president in 1922.

He was a Mason, a member of Kane Lodge, of which he was Master in 1907; he was also a member of Jerusalem Chapter No. 8.

JOHN HOWARD MUMMERY, F.R.C.S., D.Sc.

London

One of the best known dental surgeons of the world, J. H. Mummery, and who was particularly well known in this country, died recently in London at the age of seventy-nine. Mr. Mummery was the son of a distinguished dentist whose researches into the causes of teeth decay are still authoritative. As a young man Mummery was renowned for his knowledge of dental microscopy, indeed his researches covered almost the whole range of dental anatomy and pathology. His papers dealing with the development of the teeth and the innervation of dentine are of especial importance. The investigation of this latter subject was most laborious, but eventually Mummery was able to prove that the dentine of the teeth is abundantly supplied with nerve fibres. Many of Mummery's conclusions have been accepted by dentists the world over, and he was one of that small band whose reputation was truly international. His vitality was remarkable and in some respects the last ten years of his life were the most fertile. He was seventy-two when he wrote a book on *The Microscopical and General Anatomy of the Teeth,* which became a classic almost at once.

He was a member of the Committee for the Investigation of Dental Disease of the British Medical Research Council and carried out some important work for that body. He was awarded the C.B.E. for his work on injuries of the jaw during the Great War. The University of Pennsylvania conferred on him the degree of D.Sc. He had been a president of both the British Dental Association and of the International Dental Federation. The English College of Surgeons made him an honorary member, a distinction seldom given and therefore a greater honor. Mummery was a man of great charm of manner and of unfailing kindness, particularly in helping younger members of his profession in their investigations, and dentists in all parts of the world owe a debt of gratitude to Mummery for his single hearted devotion to the art he loved so well.

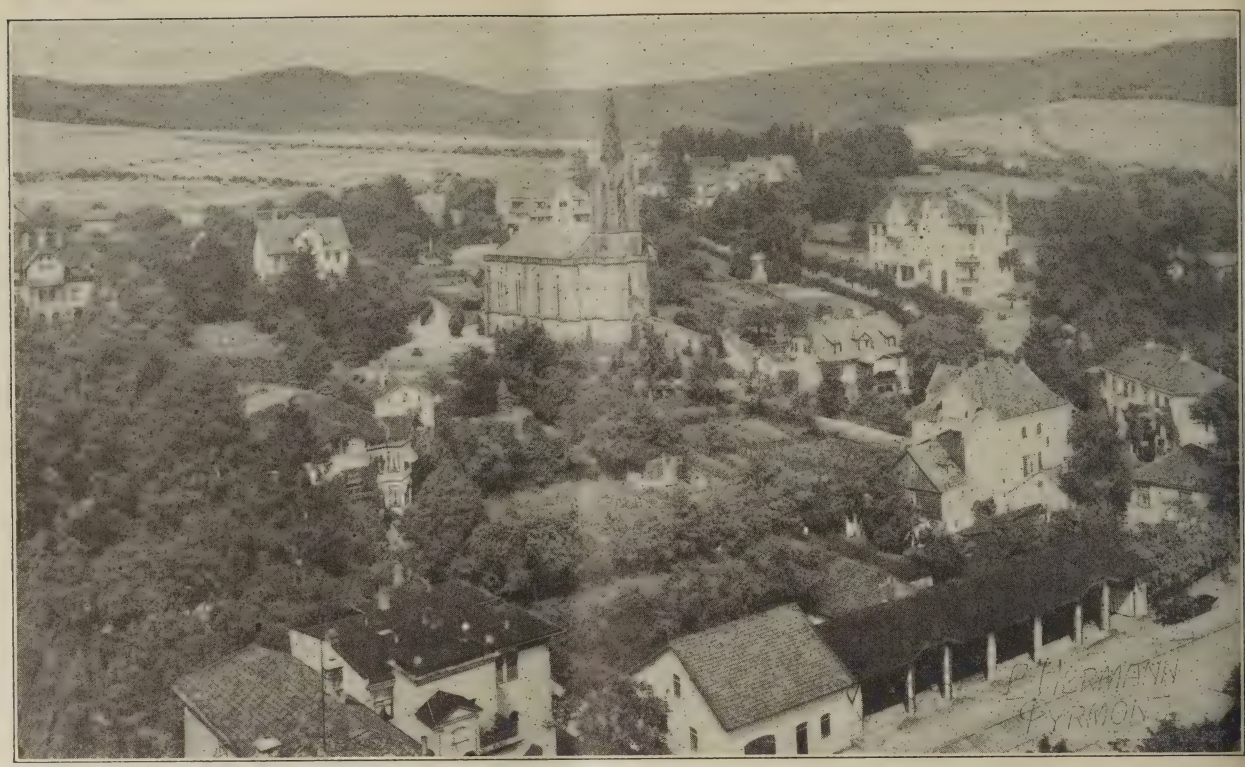


Fig. 1.—Pyrmont. Part view of resort.

The Mineral Springs of Pyrmont

ELSA DENHAM
New York

It is hard to determine just how far back in the dim past lie the origin and discovery of the springs of Pyrmont. Prehistoric graves, traces of old castles and forts, are mute witnesses of a community existing here centuries ago. Roman coins, oriental urns, hundreds of dress and belt buckles and a richly ornamented dipper were discovered some twelve feet under the ground in 1863 when excavations were started for the new foundations for the springs, evidence of offerings and donations to the deity of the healing waters. Roman history relates that after the battle of the Teutoburg Forest, the ill fated Roman general Varus retired his shattered legions to Pyrmont, where they remained to rest and regain strength through the partaking of the waters.

In every consequent century poets and writers have extolled the wonders of Pyrmont. An old chronicle relates that "in May of the year 1556, began the mysterious rush to the 'hilly springs,' " and ever since records testify to the "wondrous beauties of the resort and the properties of its waters."

Since earliest times Pyrmont has been the meeting place of royalty and one of its favorite resorts. The "Old Spring House," still in use today, was built in 1668 and the wonderful avenue of lindens leading from it was planted at the same time by order of the Duke Frederick of Waldeck-Pyrmont. Peter the Great of Russia, Frederick the Great, and Napoleon are numbered among the crowned heads who came to Pyrmont from year to year with their courts and retinues. The charming Queen Louise of Prussia, whose pathetic portrait looks down upon the visitor from the walls of the castle, was ordered to Pyrmont to recuperate after the death of one of her favorite sons. Celebrities from all over the world have foregathered at Pyrmont, with Benjamin Franklin as perhaps the best known among the earliest American patrons. The history of Pyrmont during the past centuries has been pictured in a series of contemporary or more modern paintings, on the walls of the new palatial Spring House.

The town is easily accessible. It lies on the main travel lines and American visitors arriving at Bremen, Hamburg or other continental ports can make excellent connections by fastest international trains.

The climate of Pyrmont is delightful. The air is clear and refreshing; there are no factories or smokestacks pouring forth gases and fumes. The large Teutoburg forest to the north and the hills surrounding Pyrmont stabilize the climate and exclude strong air currents.

Arriving at Pyrmont station one is immediately attracted by the picturesque red roofs showing among the green foliage. Crossing a small bridge, almost Japanese in style, over the winding Emmer, continuing along a row of delightful little villas nestling among well kept gardens, one suddenly stands in the centre of the village, in front of the ancient bubbling spring.

Few health resorts can boast of such complete and efficient health restoring establishments as are found at Pyrmont. Due to the "steel" drinking and bathing springs, naturally carbonated, its carbonated saline springs, its saline baths and extensive local moor deposits it has become a resort of first importance on the continent.

There are seven iron springs in use at Pyrmont which gush forth from a rift in the sandstone mountains above the spa. These various springs are respectively called the Main Spring or Steel Drinking Source, the Helenen Spring, the Bubbling Spring, the Friedrich Source, the *Augenbrunnen,* and two acidulous springs. The saline source springs, of slopes of the Bomberg down to the low lying valleys of the Emmer. The decomposed moor sod is rich in sulphuric acid and sulphuric salts and ammonia, humus acidity, etc., make it similar in composition to the moors of Franzensbad and Marienbad. Professor Kreussler of Bonn concludes his analysis of the Pyrmont moors saying: "It may be said with assurance that in those properties which are most characteristic and essential, and in which Franzensbad and Marienbad are recognized leaders, Pyrmont may, both in quantity and quality, safely enter into competition."

The drinking cures and the bathing cures are equally popular in Pyrmont. The principal spring,

Fig. 2.—Mineral spring fountain in enclosed promenade

which there are three, are the Salzbrunnen, the old saline source or weak saline, and the latest strong saline called *Bohrlochsole,* which flows from a driven depth of over 750 feet. The waters of the *Bohrlochsole* are piped directly to the old bathhouse, as well as to the new one, erected in 1906, and since then remodelled and improved and equipped with the most up to date medical appliances. It has been recently discovered that the three saline springs show an important degree of radioactivity.

The great specialty of Pyrmont is the combination of carbonic saline and iron water baths, according to given prescriptions and called steel saline baths. This form of cure, used particularly in heart complications, is growing in importance from year to year and its efficacy is increasingly becoming more widely recognized. Nauheim owes most of its reputation as a heart resort to just this form of baths and Pyrmont is gradually acquiring a similar repute.

The large iron moor deposits of Pyrmont spread over miles of ground in all directions from the the old *Hyllige Born* and the *Helenensource* are technically so perfectly prospected that the water may be filled into the glasses without the slightest change or deterioration of its original constituent form. The popularity of the drinking cure has compelled the management to build a new spring house and an enclosed promenade in which the visitor may take exercise while drinking the waters even in bad or rainy weather.

Pyrmont has two bath establishments and a Kurhaus. The socalled lower bathhouse, built at a time when the demands were more modest and tastes more simple, has now been provided with all the latest technical innovations. This bath establishment lies about a mile from the centre of the town; it is surrounded by beautiful lawns and is easily accessible by means of street car connections. The upper bath establishment lies in the centre of the village. Its monumental exterior, its artistic trim, and its high class appurtenances make it one of the most luxurious yet refined establishments of its kind. Each bath

Fig. 3.—In the Kurpark

cubicle is steamheated, ventilated, and supplied with clock, linen, warming apparatus, etc. Heavy rugs in all the hallways deaden the sound. The required personnel is summoned by electric light sign system instead of by bells, so as to insure complete restfulness. A special heating system which reduces the loss of carbonic acid gas to an infinitesimal percentage has been provided for the warming of the bath water. This bath establishment has 143 bath cells and offers steel, saline and mixed baths, the latter Pyrmont's specialty. Twenty-nine cubicles are fitted for moor baths and fifteen for moor packs. For patients who are unable to move about special bath cells with appropriate appliances have been installed.

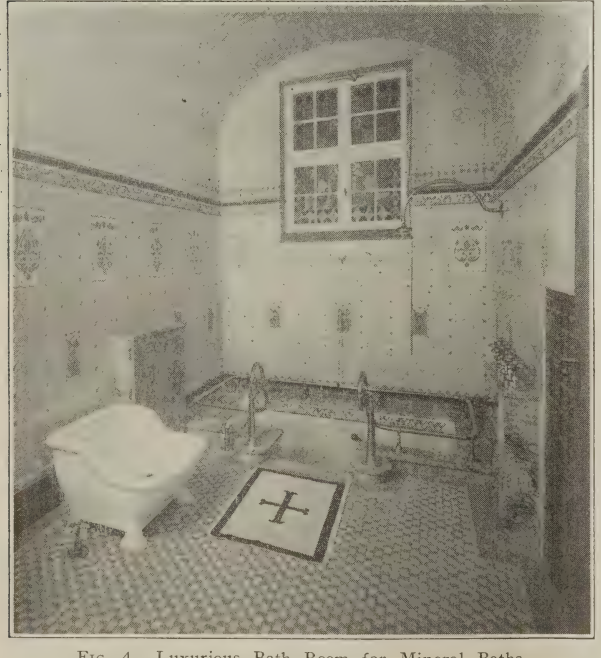


Fig. 4.—Luxurious Bath Room for Mineral Baths

The *Kurhaus* proper has bath cells adjoining the rooms, so arranged as to allow of the giving of all mineral water baths. The Kurhaus is connected with the upper bath establishment by an arcade, and the guests at the former may reach the bath building without going outside.

A number of medicomechanical installations for the removal of curvatures, especially such as those occasioned through war injuries, have been placed in a special room in the upper bath building. Electric light and electric water baths of every description and artificial sunbaths are also given here under medical supervision. One large hall has been set aside for inhalatory treatments. Special cubicles are so arranged as to permit the individual regulation of temperatures during and after treatments, thus avoiding the danger of relaxed mucous membranes and preventing further colds. As usual, a pneumatic machine controls the various degrees of condensed air prescribed for inhalation in cases of lung, heart and ear troubles. A separate inhalatorium for more general use may be found in a detached building, delightfully located in the *Kurpark*.

All the latest medical instruments may be found

Fig. 5.—Resting on the lawn

in Pyrmont: electrical machines for faradization and galvanization, the electric cardiograph and the many varied appliances for hot air treatments, four cell baths, x ray photography, and x ray treatments.

The curative properties of the Pyrmont springs are well defined and firmly established. Their main functions are indicated in all cases of diseased conditions of the blood, the circulation, nerves, female disorders and metabolism.

Even before iron had been established as an essential factor in the cures of blood diseases or before the Pyrmont main spring had been analyzed, the latter had gained a reputation as eminently restorative in cases of anemia of every description. Gout and all manner of gouty conditions, as well as obesity,

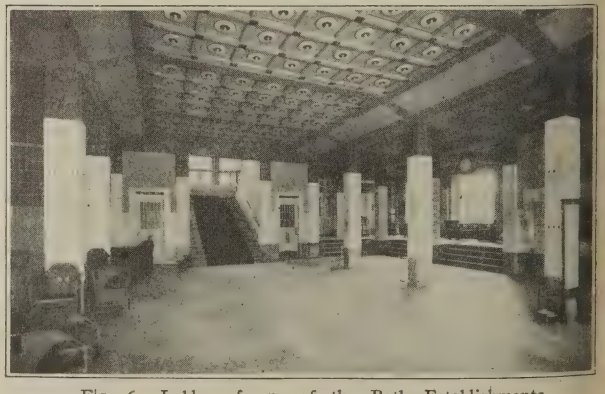


Fig. 6.—Lobby of one of the Bath Establishments

are some of the most important medical indications of Pyrmont. Experiments made at Berlin laboratories with Pyrmont salines have yielded the most convincing results in clearing the human system of the injurious nitrogenous combinations. The results attained through these experiments were enhanced by the use of baths and packs of Pyrmont moor. The humid warmth engendered by the applications of the medicinal earths (moor, fengo, etc.) dissolves the gouty deposits, which are then eliminated by the drinking of the Pyrmont salines.

A similar result is obtained by the use of Pyrmont moor applications in cases of infections, adhesions, or the consequences of acute inflammations. Hence disorders of the female sexual organs, deposits following an acute inflammatory rheumatism, nervous disorders consequent upon growths or other anatomical abnormalities, ischias, paralyses resulting from inflammation of the nerves, or from injuries, as well as chronic rheumatism are immensely benefitted by a cure at Pyrmont.

Since the fact has been established that heart troubles are successfully treated with baths of water highly impregnated with carbonic acid, the number of patients that come yearly to Pyrmont for the treatment of heart ailments is steadily increasing. Remarkable results have been obtained in Pyrmont in all heart indications.

Hysteria, all inclinations to chorea or similar conditions are satisfactorily treated through Pyrmont saline waters, which are also considered a preventive of appendicitis. Many cases of apparent sterility have been successfully overcome through a course of treatment at Pyrmont.

In addition to the facilities connected with its own distinctive medical indications, Pyrmont offers every facility and the most modern equipment for the treatment of most of the ailments for which cures are sought in the best known watering places of the world.

Besides the curative merits of Pyrmont, its charm as one of the most delightful and refined resorts of Europe should not be overlooked.

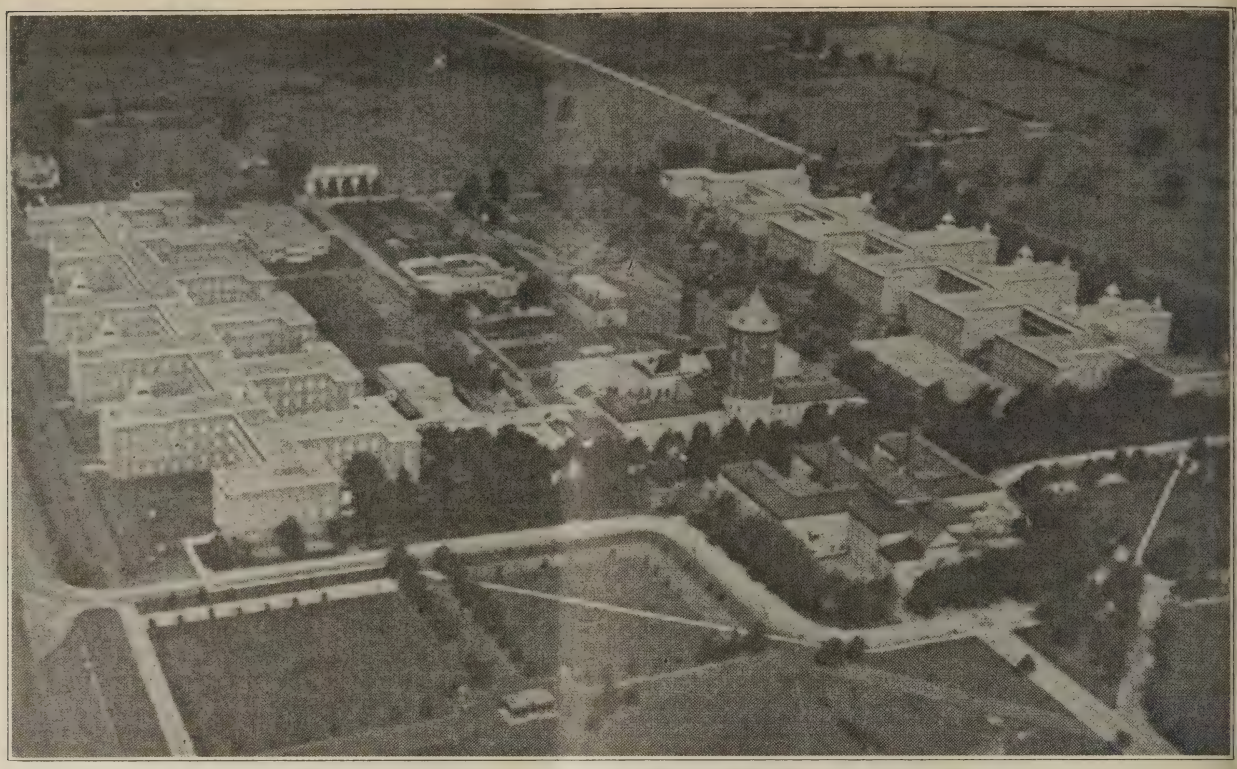
Ample provision for entertainment and for recreation has been provided for visitors. Concerts, operatic and theatrical performances of the very best, musicales and balls follow on days of outdoor sports. There is fine fishing, good golf, trap shooting and hunting in the vast well stocked preserves, while Pyrmont's tennis tournaments, horse shows, and automobile and horse races are among the best known sporting features of German life.

Annual Clinical Congress of American College of Surgeons

On Monday morning of October 5, 1926, the sixteenth annual Clinical Congress of the American College of Surgeons convened in the Windsor Hotel, Montreal. Than Montreal few cities of this continent are better adapted for the holding of such a meeting. It is admittedly the convention city of Canada, on account of its good railway facilities, its size and importance as the second largest port of North America and as a distributing centre, its picturesque situation and its lovely surroundings and the number, capacity and equipment of its hotels. Montreal possesses that flavor or halo of age and tradition which appeals to that sentimental side of the American character which is one of its predominant features. For a surgical meeting Montreal is adapted peculiarly well. It contains many large and excellently up to date hospitals, as well as special hospitals which reach a high standard of efficiency.

Not the least of its outstanding qualifications are its French-Canadian hospitals. The French were

Royal Victoria Hospital



Hôpital Saint-Jean-de-Dieu

the pioneers of Canada and its earliest settlers. Maisonneuve, or rather one of his wonderful women coworkers, Jeanne de Mance, founded the Hôpital Dieu in the earlier days of Mont Real. The French speaking population constitute the majority of the inhabitants of Montreal, and their hospitals, for the most part are of a religious as of a medical and surgical character, and whose nursing staffs are composed of sisters.

OPENING SESSION

The following account of the meeting of the American College of Surgeons will be more of a discursive and chatty than of a strictly scientific nature. It should, at once, be emphasized that these clinical congresses are really what their name denotes and their object above all is practical, that is to teach and afford information. Social functions do not come within the scope of the Congress, the slogan is business first. On the morning of October 25th, the opening session was held in the Windsor Hall of the Windsor Hotel under the chairmanship of Dr. Rudolph Matas, the retiring president. This meeting was concerned with the hospital question, the standardization of hospitals being one of the main objects to which Dr. Franklin Martin, the Director General of the American College of Surgeons, has directed his boundless energy and powers of organization assisted it may be said by associates whom he has imbued with his own enthusiasm, and who vie with him in the attempt to reach the goal.

Dr. A. K. Haywood, superintendent of the Montreal General Hospital and chairman of the Montreal Hospital Congress, delivered the opening address. Dr. Haywood gave an outline of the organization and work of the Montreal hospitals, pointing out that as the case is with many other cities owing to the rapid growth of Montreal and its consequently growing needs, all the hospitals were crowded.

General Sir Arthur Currie, president of McGill University, said, in part, that there was no science which had such a practical bearing upon the relief of human ills as that of medicine and surgery. It had been said that public health was the foundation of the happiness of a people and the power of a country. He wished that all our statesmen, real or imaginary, would be willing to take this advice and follow it. The war had disclosed the appalling number of physically unfit, and this was due largely to the lack of interest in public health, not the fault of the medical men, but of the state's indifference. One of the most interesting speeches was by Prof. David P. D. Wilkie, of Edinburgh, who discussed the British hospital problem. He characterized the standardization of hospitals as a landmark in medical history. It meant bringing the latest discoveries of medical science within the reach of all men rich or poor. The high standard achieved in most American hospitals, he said, was the best possible tribute to the effectiveness of this movement. A big problem existed in regard to the small hospitals. He thought that by linking up with larger institutions the small hospitals would not lose their individuality, and would gain many of the advantages of the larger hospitals. In Britain the problem was difficult. There were hospitals for indigent patients where nothing was paid, and there were many costly institutions where the wealthy were cared for in sickness and paid heavily for it. There was a class in between these two which was not provided for at all. The better class workingman, who scorned anything tainted with charity, and yet could not pay the high fees of costly nursing

homes, had no place to go for nursing and hospital care. The only remedy for this condition, he thought, was to be found in a scheme of standardization.

Owing to limited space, and to an embarrassment of riches in the way of papers, addresses, speeches, and clinical meetings and demonstrations, many features of great interest and value must be left untouched or discussed only cursorily.

NEW PRESIDENT

The instalment of the new president, Dr. Walter W. Chipman, of Montreal, was one of the *bonnes bouches* of the meeting. This ceremonial function took place on the evening of October 25th, in the Windsor Hall. The ceremony was impressive. The massive mace presented to the college by the consulting surgeons to the British armies at the front during the Great War was borne by a stalwart lieutenant of the Duke of York's Royal Canadian Horse, at the head of a procession of distinguished Fellows of the college, eminent visitors and foreign guests, and laid down on a table on the platform draped by the Union Jack. Among the thirty present on the platform were Dr. Franklin Martin, the Director General, and other well known American and Canadian surgeons, and ten distinguished guests. Dr. A. Bazin, of Montreal General Hospital, and chairman of committee on arrangements, on behalf of the resident profession of Montreal welcomed the College of Surgeons to the city. Sir Arthur Currie, principal of McGill University, followed with a thoughtful address, and then the retiring president, Dr. Rudolph Matas, gave an eloquent speech, in the course of which he made special mention of the honor paid to the College by the presence of two Regius Professors of the chief Scottish universities, welcoming them to a spot where "the heather and the thistle seem to grow apace with the maple and the fleur-de-lis, with McGill University proclaiming the strength and stability of Scottish tradition and culture."

Prof Roberto Alessandri, Rome, Italy. Mr. A. Sampson Handley, Surgeon to Middlesex Hospital, London, England

The title of the address was Surgery and the International Spirit, the tenor of the entire address was to the effect that science, in which, of course, medical science is included, knows no boundaries. He referred to Pasteur and Lister as the two greatest benefactors in medical science to the human race and emphasized his statement by giving the following paraphrase of a well known saying, "I am a surgeon and nothing human is foreign to me." At the conclusion of his address Dr. Matas invested his successor, Dr. Walter W. Chipman, of Montreal, with the robes of office. Dr. Chipman's first official duty was to call upon Dr. Franklin Martin to introduce the distinguished guests. These were: Prof. David P. D. Wilkie, Edinburgh, Scotland; Prof. Roberto Alessandri, Rome, Italy; Sir Ewen Maclean, Cardiff, Wales; Prof. Archibald Young, Glasgow, Scotland; Prof. John M. C. Fraser, Edinburgh, Scotland; Mr. W. Sampson-Handley, London, England; Prof. Louis E. Barnett, Dunedin, New Zealand; Prof. Ricardo Palma, Lima, Peru, which by the way is the oldest university on these continents; Prof. Rudecende da la Fuente, Valparaiso, Chile, and Prof. Luis de Rezenie Puech, San Paulo, Brazil.

In his presidential address Dr. Chipman discussed cancer prophylaxis. There is not space here to deal with Dr. Chipman's address at length; it will be referred to thus later. It must suffice to say that he pointed out that there was a growing knowledge of the disease and that a way of salvation might soon be opened from one of the greatest scourges of human life. He quoted statistics which went to show that there were eighty thousand deaths in the United States from cancer each year, and that Canada was a heavy sufferer. He gave a working hypothesis, to the effect that cancer was brought about more probably by growth and decay than by an organism. The moral, therefore, was to keep young as long as possible and as age is a question of tissues not of years, it behooved us to lead more simple and frugal lives, to eat less, to drink less of fluids other than water, and to drink much water between meals.

The final address of the evening was the John B. Murphy oration in surgery which was given by Professor Archibald Young, of Glasgow. Professor Young chose as the subject of his address a sketch and a somewhat intimate sketch of one of the greatest surgeons and original thinkers who ever lived, Sir William Macewen. It also dealt with his important influence on the evolution and development of the Glasgow School of Surgery.

(*To be continued*)

News Items.

Nobel Prize Winner in Medicine.—The Nobel Prize in Medicine has been awarded to Prof. Johannes Fibiger of the University of Copenhagen. Professor Fibiger has distinguished himself by researches in both cancer and tuberculosis, and was the winner in 1924 of the Jung cancer research award.

Hungarian Experts Studied New York State Methods.—Among the distinguished foreign visitors who last year studied health administrative procedures in this country, says *Health News,* was Dr. F. Kiss of Hungary. He was present as an interested observer at the health officers' course held in Watertown, N. Y. Dr. A. C. Gaal, assistant at the Hygienic Institute in Budapest also visited the New York State Department of Health to study methods. Dr. Kiss has been instrumental in starting a health officers' course in Sarospatak.

Lectures on Child Health.—A series of fifteen lectures on the Child and His Needs, a practical course on the mental health of children, is being given at the Boston University College of Liberal Arts Building, under the direction of the University School of Education, according to the *Mental Hygiene Bulletin.* J. Mace Andress, Ph.D., is in charge of the series, assisted by experts on various phases of child health. These lectures began in September and are being held on successive Tuesday evenings. This course, which is similar to ones that have been given during the last few years at the university, includes lectures by Dr. Douglas A. Thom, Ernest R. Groves, Ph.D., Dr. Karl M. Bowman, Dr. Ransom M. Greene, Dr. Abraham Myerson, Augusta F. Bronner, Ph.D., Dr. George K. Pratt, Arthur H. Kallom, John M. Brewer, Ph.D., Dr. Henry B. Elkind, Dr. William Healy, and J. Mace Andress, Ph.D.

New Lutheran Hospital Plans.—Announcement has recently been made of further details of the plans for the building of the Lutheran Hospital, to be erected at West 178th Street and Bennett Avenue, New York City. The cost of the building, exclusive of site and equipment, will be $750,000. It will be eight stories in height. The first floor will house the administration offices and dispensary rooms, and the floors above will be devoted to the wards, private and semi-private rooms, operating rooms, and several laboratories. One of the chief features of the building will be the smallness of its wards. The largest will be limited to nine beds, and four will be the number in most of them. Every room is to have direct sunshine during most of the day. There will be a children's department with a large play room. A laundry and power plant will be housed in a separate building. An ultimate capacity of 600 beds is being planned for, with a separate building for nurses. The hospital will maintain its present plant at 144th Street and Convent Avenue until such a time as that neighborhood is cared for by another institution.

Dinner in Honor of Major Bocchetti.—A dinner attended by forty-eight men was given at the Union League Club, New York City, by Dr. William Seaman Bainbridge recently in honor of Major Federigo Bocchetti of the Italian Army Medical Corps. Major Bocchetti is also director of the Military Tuberculosis Sanatorium at Anzio, and was delegate from Italy to the recent International Congress for the Control of Tuberculosis held in Washington, and to the meeting of the Association of Military Surgeons of the United States held in Philadelphia. The dinner was tendered in honor also of the other foreign delegates to these congresses who were visitors in New York City. In addition it was a recognition, through honoring Major Bocchetti, of Italy's courtesy to the American delegate to the Second International Congress of Military Medicine and Surgery, held in Rome in 1923, and of the leader of the Military Medical Service of Italy, General Bella Valle. Dr. Bainbridge acted as toastmaster. The speakers included Admiral Charles P. Plunkett, U. S. N.; Col. José Izquierdo, Surgeon General of the Venezuelan Army; Major Murad Bey, of the Turkish Army Medical Corps; Lt. Col. Mario Adami, of the Medical Service of the Royal Italian Army; Dr. M. Santovicenzo, Royal Italian Vice Consul; Dr. Antonio Stella, and Count Thaon di Revel. Among the guests present were Count Perera, Professor Benedett, Dr. Carlo Savini, Dr. R. F. Sheenan, Dr. Fenton B. Turck, Col. F. R. Keefer, U.S.A.; Dr. John A. McIsaacs, Dr. H. W. Frauenthal, Dr. Frank C. Lewis, Col. E. K. Sprague, U. S. Public Health Service; Dr. John Duff, and Dr. A. B. Hirsh.

Entrance Examinations for Public Health Service.—Examinations of candidates for entrance into the regular corps of the United States Public Health Service will be held on December 6, at Washington, D. C., Chicago, New Orleans and San Francisco.

Industrial Hygiene Course.—A course of lectures on industrial hygiene for nurses is being conducted by the School of Sociology and Social Service of Fordham University, New York City, each Thursday evening from 8 to 10 o'clock on the twenty-eighth floor of the Woolworth Building. The subjects discussed are public health, accident prevention, first aid, sanitation, workmen's compensation, protective legislation, child labor, continuation schools, industrial diseases, and general welfare work in industry.

Berlin Marriage Advice Bureau.—A few years ago Vienna opened a bureau for giving advice to those contemplating matrimony and those already involved in unfortunate unions. So great was the success of this bureau that Berlin has followed Vienna's example and opened a similar institution in the poorer quarters of the city in a modern former school building. Dr. F. K. Scheumann is head of the new bureau, and is quoted as stating as follows the aim of the institution: To serve as a guide, friend, and counsellor to three particular classes of human beings: those who stand expectant before love, those who stand uncertain before the dispensation of marriage, and those who are already involved in marriage. Their problems will be dealt with in a friendly manner from a scientific, medical, social and human viewpoint.

Gifts and Bequests.—Through the will of the late Louise H. Vanderbilt, wife of Frederick W. Vanderbilt, which was recently filed for probate, legacies of $10,000 each were bequeathed to the following institutions and organizations: the New York Orthopedic Dispensary and Hospital, the Woman's Hospital, the Children's Aid Society, the American Society for the Prevention of Cruelty to Animals, the Anthony Home, the Stanton Street Helping Hand Association, and the New York Women's League for Animals.

A gift of $25,000 from Hancke Hencken of New York City to the building fund of the new Lutheran Hospital was announced at a dinner of the hospital advisory committee held recently at the Hotel Astor. Henry Kroger, chairman of special gifts work in connection with the drive by the hospital for $750,000, announced the contribution, saying that Mr. Hencken, who is not officially connected with the hospital, had previously given $20,000 in support of its work. The drive to raise the remainder of the fund will be held from November 29th until December 10th.

Personal.—Dr. Stephen J. Spitzer has been appointed a surgeon in the Sydenham Hospital, New York City.

Among distinguished guests recently in the United States was Dr. P. Paru, who is regarded as one of India's greatest women physicians. She is associated with Dr. Anna Kugler in Guntur Lutheran Hospital.

Dr. John B. Byrnes, Jr., for a number of years associate obstetrician and gynecologist to Kings County Hospital and St. Peters Hospital, has been made manager of the Brooklyn State Hospital.

Dr. Roy E. Bushong, who has recently completed his fellowship training in extramural psychiatry with the National Committee for Mental Hygiene, New York City, has been appointed director of the mental hygiene clinic of Milwaukee County, Wisconsin.

Dr. Henry J. Gerstenberger, of Western Reserve University School of Medicine, and director of pediatrics at the Babies' and Children's Hospital at Cleveland, recently delivered an address on Studies in Rickets before the Section of Surgery of the Buffalo Academy of Medicine. Preceding the lecture, Dr. Gerstenberger was guest of honor at a dinner at the Hotel Statler, given by the Fellows and Associates of the Academy.

Dr. Janet G. Travell, who was graduated from the Cornell University Medical College in 1926, and who won the first of the John Metcalfe Polk Memorial Prizes for excellence in scholarship, has been made one of the medical staff of the New York Hospital, where she is the only woman physician.

Dr. J. F. Montague of New York addressed the Nassau County Medical Society Thursday evening, October 14, on the Rectal Diseases Amenable to Office Treatment.

Dr. Adolf Lorenz, of Vienna, expects to arrive in this country on November 21. He will resume the practice of orthopedic surgery at the office of Dexter D. Ashley, 346 Lexington Avenue, New York.

Society News and Notes.

At the International Physiological Congress held recently in Stockholm, the American Physiological Society tendered an invitation to the representatives of the various organizations to hold the next International Congress in the United States. This invitation was accepted by the bodies represented, and plans are being made for a meeting to be held in this country in 1929.

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The Beth David Hospital Clinical Society elected the following officers at its recent meeting: Chairman, Dr. Jacob Sobel; vice-chairman, Dr. Marks S. Shaine; secretary treasurer, Dr. M. H. Levine.

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An innovation in the way of animal welfare has recently been introduced in New York City by the Society for the Prevention of Cruelty to Animals in the form of a motor drinking tank. This tank holds 300 gallons, has two faucets to enable drivers to draw water in pails if they wish, and a bubbling cup for the use of humans. The society has announced that it expects in the near future to make all its drinking tanks movable by converting them into motor drawn receptacles.

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Under the auspices of the *Internationale Gesellschaft für Sexualforschung* the International Congress on Sexology was held in October in Berlin. Among the subjects discussed wilth relation to their connection with sex problems and psychology were race, nationality, heredity, transformation of the sexes, rejuvenation, the psychology of sex and of the various life periods, intelligent choice of a mate, celibacy, illegitimacy, sex in art and religion, sexual crimes, eugenics, birth control and other problems. Among the speakers at the recent International Congress were Professor Steinach of Vienna, Dr. Harry Benjamin of New York City and Dr. Marinesco of Bucharest.

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The National Association for Music in Hospitals, founded in 1925, has recently announced that it will offer scholarships to musicians willing to be trained in the work of making available suitable music for the sick. The association works in every way in conformation to hospitals conditions, standards and regulations, and cooperates closely with the institutional staff of doctors and nurses. One of the honorary vice presidents of the association is Dr. Frederick Peterson.

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Dr. Robert Chambers, professor of microscopic anatomy at Cornell University Medical College, will deliver the second Harvey Society Lecture at the New York Academy of Medicine (new building, 103rd Street and Fifth Avenue), on Saturday, November 20, 1926. His subject will be The Nature of the Living Cell Revealed by Microdissection.

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The first annual convention of the New England Association for Physical Therapeutics met in Boston, October 26th-28th. The association was founded in 1906. Among the speakers were Dr. Herman Goodman, Dr. Richard Kovacs and Dr. Wm. B. Snow of New York; Dr. H. V. Robinson of Montreal, Dr. William Martin of Atlantic City, and Dr. J. S. Stone of Boston, president of the Massachusetts State Medical Society.

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The International Council for the Education of Exceptional Children held a convention recently at which the following were elected officers for the coming year: president, Elizabeth Farrell of New York City; secretary, Lavinia Warner of Ohio University; treasurer, Hanarose Haggerty, of Dubuque, Iowa.

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The Nassau County Medical Society at its October meeting heard Dr. J. F. Montague of New York City speak on Rectal Diseases Amenable to Office Treatment.

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The first meeting to be held by the New York Academy of Medicine in its new building, Fifth Avenue and 103rd Street, will be on Thursday evening, November 18, at 8:30 o'clock. This will be the occasion of the Wesley M. Carpenter lecture, which will be delivered by Prof. Michael I. Pupin of Columbia University on the subject, Ionization and Chemical Reactions.

The Section of Orthopedic Surgery of the New York Academy of Medicine will meet in the new building Friday evening, November 19, at 8:30. The chief feature will be the presentation of cases by Dr. Sigmund Epstein from the Bronx Hospital, Dr. P. William Nathan from the Mt. Sinai Hospital, Dr. A. DeF. Smith from the New York Orthopedic Hospital, Dr. Charles H. Jaeger and Dr. Walter I. Galland from the Lenox Hill Hospital, Dr. Reginald H. Sayre and Dr. L. T. LeWald from Bellevue Hospital, Dr. Percy W. Roberts from the Hospital for Ruptured and Crippled, Dr. Leo Mayer from the Hospital for Joint Dieeases, and Dr. Fred H. Albee from the Post Graduate Hospital. Other meetings will be as follows: Section of Laryngology and Rhinology, November 24, with the presentation of cases by Dr. David H. Jones and Dr. Irving W. Voorhees, and paper of the evening on Coagulation Time Prior to Tonsillectomy, by Dr. Westley M. Hunt; the Harvey Society, November 20, with a lecture by Prof. Robert Chambers of the Department of Microscopic Anatomy of Cornell University Medical College on the Nature of the Living Cell Revealed by Microdissection. The Academy has given special notice that all meetings announced will be held at Fifth Avenue and 103rd Street unless otherwise noted on the programs.

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At the thirty-sixth annual meeting of the New York and New England Association of Railway Surgeons, held recently in New York City at the Hotel Commodore, the following were elected officers for the coming year: president, Dr. J. A. Reid of Troy, N. Y., first vice-president, Dr. E. R. Lee of Randolph, N. Y.; second vice-president, Dr. I. R. Calkins of Springfield, Mass.; secretary, Dr. Horace H. Le Seur of Batavia, N. Y.; assistant secretary, Dr. B. W. McCuen of Syracuse; treasurer, Dr. James M. Hamilton, of Rutland, Vt.

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The California League of Municipalities at its recent meeting elected for president Dr. John J. Sippy, health officer of the San Joaquin Health District, with headquarters at Stockton, Calif.

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Among foreign delegates who attended the Washington meeting of the International Union and the National Tuberculosis Association were: Dr. Ernst Loewenstein of Vienna, Dr. F. J. H. Coutts, C.B., and Sir Henry Gauvain, both of London, England; Dr. Fergus Hewat of Edinburgh, Scotland; Col. S. Lyle Cummins of Cardiff, Wales; Dr. Léon Bérard, Dr. F. Humbert, Dr. B. Weill-Hallé, all of Paris; Prof. Friedrich Müller and Dr. Ferdinand Sauerbach of Munich; Dr. Fred Neufeld and Prof. Lydia Rabinowitsch-Kempner of Berlin; Dr. Hugo Selter of Bonn; Dr. P. J. L. De Bloeme of Laren, Holland; Dr. Heynsius Van den Berg of Amsterdam; Dr. H. J. van Nederveen of the Hague; Prof. Julius de Daranyi and Dr. Nicholas Schiller of Budapest; Prof. Vittorio Ascoli of Rome; Dr. G.B. Roatta of Florence; Prof. Gaetano Ronzoni of Milan; Dr. Rokuro Takano of Japan; Dr. C. S. Butler of Port-au-Prince, Hayti; Dr. Fernando Rensoli of Havana; Prof. Francis Harbitz of Oslo, Norway; Prof. Thiago d'Almeda of Porto, Portugal; Prof. Hans Christian Jacobaeus of Stockholm; Dr. Jaquerod of Leysin, Switzerland; Dr. F. Jessen of Davos, Switzerland; Prof. Demieville of Lausanne, Switzerland; Dr. Stojanovitch of Belgrade; Dr. Vladimir Cepulié of Zagreb, and Dr. Francois Swoboda of Prague.

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The New England Conference of Industrial Physicians elected at its last meeting in Boston the following officers: chairman, Dr. R. P. Knapp of Cheney Brothers, South Manchester, Conn.; vice chairman, Dr. E. T. Sawyer, of Arlington Mills, Lawrence, Mass.; secretary treasurer, Dr. D. C. Parmenter, of the Harvard Industrial Clinic.

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The Committee on Medical Education of the New York Academy of Medicine has just published a synopsis on Approved Opportunities for Graduate Study in Röntgenology in New York City. This synopsis is the last of a series of twelve covering dermatology and syphilology, obstetrics and gynecology, internal medicine, ophthalmology, otolaryngology, pediatrics, surgery, urology, neurology and psychiatry, orthopedic and rehabilitation surgery, röntgenology, and preclinical medical science subjects. Copies of the synopses may be obtained on application to the bureau of clinical information of the academy.

Book Reviews

ELECTROTHERAPY

Electrothermic Methods (Desiccation and Coagulation) in the Treatment of Neoplastic Diseases. Designed as a Practical Handbook of Surgical Electrotherapy for the Use of Practitioners and Students. By J. Douglas Morgan, B.A., M.D., Formerly Radiologist, Ross Pavilion, Royal Victoria Hospital, Montreal. Illustrated with thirty-six Line and Halftone Engravings. Philadelphia: F. A. Davis Company, Publishers, 1926. Pp. 172.

Surgery of Neoplastic Diseases by Electrothermic Methods. By George A. Wyeth, M.D., New York. Preface by Howard A. Kelly, M.D., Baltimore. With One Hundred and Thirty-seven Illustrations. New York: Paul B. Hoeber, 1926. Pp. xvi-298.

Now that electrodesiccation and electrocoagulation are being used by the general practitioner and much of the mystery surrounding electrothermic methods is being dispelled textbooks on the subject are beginning to appear. Such books are especially welcome because medical schools have not dignified the subject by giving courses therein. Morgan asserts that his little book is the first to be devoted exclusively to these methods. The purpose of the book is to supply to the medical profession a statement of the value of the electrothermic methods, the means of their production, and the manner of their application. Enough is shown to the inexperienced operator at least to make a beginning. After discussing the first principles and definitions of electricity and the chemical and physical effects of currents, surgical diathermy is taken up. In a general summary the technic and indications for the treatment are given in a direct, terse but complete manner. A chapter is also devoted to the value of the socalled endotherm or radioknife, which requires a special apparatus and technic. This is the very last word in electrothermic methods and is still in its early infancy. The illustrations are numerous and purposeful. Much information is included within the covers of this little book.

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Howard A. Kelly, in his introduction to Wyeth's book, notes the following advantages for the treatment of accessible forms of malignancy with electrothermic methods: a shortening of the time of an operation, partly due to the absence of hemorrhage; there is no handling of tissues; operations can be done at one or more than one sitting; an infected field is often sterilized, leaving a clean wound; granulations form promptly and afford an excellent field for grafts; malignant disease can be sterilized and destroyed *in situ,* leaving a healthy slough; there is, as a rule, but little, or no after pain; the scar is less likely to pull and cause disfigurement; certain secreting or infected nonmalignant sacs or diverticula can be destroyed and left *in situ;* beautiful, delicate dissections can be effected with the needle—the acusector. The scalpel and ligature are discarded.

There is some confusion in the terminology and Wyeth suggests the use of the word endothermy to indicate the surgical application of high frequency currents, and the use of the word diathermy to indicate medical applications. After going into the history of high frequency currents, their production and effects on tissue are thoroughly discussed. The three modalities, monopolar endothermy, bipolar endothermy and the endotherm knife are then described in great detail. With the latter, a cutting current is developed by the three element vacuum tube and is of such extremely high frequency that it produces a molecular dissolution of the tissues, sealing lymphatics as it cuts by a thin line of coagulation. This appears to be the last word in the surgery of malignancies. The application of endothermy to lesions of the mucous membranes, including leucoplakia, epulis, ranula, tonsillectomy, larynx, rectum, hemorrhoids, uterus, urethra and vulva, and bladder and also to skin lesions is then described. There are numerous citations from other authors. The illustrations are very useful, including untouched, actual photographs of lesions before and after treatment, which are very convincing. Micropathology is not neglected. Both the author and the publisher are to be congratulated upon the publication of this pioneer work.

BIOLOGICAL EFFECT OF LIGHT

Biologische Lichtwirkungen beim gesunden und kranken Menschen unter besonderer Berücksichtigung der Rachitis. Eine Ubersichtsarbeit. Von Priv.-Doz. Dr. Fr. Peemöller. Leitender Arzt der Abteilung für physikalische Therapie des Allgemeinen Krankenhauses Hamburg-Eppendorf. Sonderabdruck aus der Strahlentherapie, Bd. XX (1925).

This is an exhaustive monograph on the biological effect of light in the healthy and diseased human being, especially in rachitis. The results with heliotherapy are discussed in detail, with special consideration of the effects of the different regions of the spectrum on rachitis. The rays are divided into visible rays, the dark heat rays, the ultraviolet rays and ultraviolet plus heat rays. The histology of the skin changes as shown by erythema and pigmentation is described. In addition the effect of the light upon the internal organs and their functions are taken up. The effects on the blood, circulation, respiration, metabolism, enzymes, toxins and antibodies, and the nervous system and smooth muscles are given in detail. A very extensive bibliography of the German literature is appended, but very little attention is paid to publications in other languages.

OBESITY

Obesity. By Leonard Williams, M.D. Oxford Medical Publications. London, New York, etc.: Humphrey Milford, Oxford University Press, 1926. Pp. ix-171.

This monograph differs markedly from the usual in that it is written and conceived in somewhat of a whimsical style. While it gives due consideration to the modern views as to the endocrinological factors of obesity and vitamines, the author has drawn much assistance from Francis Heckel's *Les Grandes et Petites Obésités* and inspiration and stimulation from two works by William Wadd, entitled *Cursory Remarks on Corpulency,* published in 1819, and *Comments on Corpulency,* published in 1829, both rare publications. Some of the illustrations are drawn from these works, while others are original or drawn by Stampa who is an artist for *Punch,* the comic paper.

There are five chapters, entitled The Tributaries

of Obesity, The Bantlings of Obesity, Eve, dealing with obesity in the female, The Complicity of the Endocrines, and Counterchecks. Even these titles are out of the ordinary. There are five appendices, dealing with a table for average weights for men and women, respectively, average weights and heights in the young, the modified Banting dietary, and the unfired dietary.

The material proves most interesting reading, being both instructive and a source of extreme pleasure. One is really surprised that a medical publication can afford so much satisfaction and pleasure. It is most admirably suited for reading in leisure hours.

DIABETES

The Pathology and Treatment of Diabetes Mellitus. By George Graham, M.A., M.D., F.R.C.P., Assistant Physician, St. Bartholomew's Hospital. Oxford Medical Publications. Second Edition. London, New York, etc.: Humphrey Milford, Oxford University Press, 1926. Pp. xv-230.

The discovery of insulin has necessitated a second edition of this little book to keep it abreast of the times. Many alterations have been made in the text, and a new chapter on the special properties of insulin and another giving the details of the treatment with insulin have been added. Part I refers to the physiology of sugar metabolism and also includes the chapter on insulin. Part II refers to the different types of diabetes mellitus and the methods of distinguishing them, the different theories of the cause of diabetes, the principles of treatment and the principles and details of the insulin treatment. Also a chapter on the causation and treatment of diabetic coma. Eight appendices contain some valuable practical material, such as the ladder diet of the Medical Clinic of St. Bartholomew's Hospital, the maintenance diet, recipes, food values, the metabolism and growth from birth to puberty, the necessary clinical methods of examining urine and blood, basal metabolism, and charts for gauging the correct dose of insulin. On the whole this is a very valuable little book.

GUIDE FOR DIABETICS

A Guide for Diabetics. By Walter R. Campbell, M.A., M.D. (Tor.), Department of Medicine, University of Toronto and Toronto General Hospital, and Mame T. Porter, B.Sc., Dietitian, Toronto General Hospital. Baltimore: The Williams & Wilkins Company, 1926. Pp. 259.

Since the successful treatment of diabetes mellitus hinges upon the proper management of the patient's diet it is absolutely necessary that the patient should have accurate knowledge as to the nature and quantity of his food, as well as to note the progress of his condition. The disease is such that the constant supervision of the patient by the physician is necessary. The purpose of this guide is to explain certain facts about diabetes and to provide him with a number of tested recipes for suitable foods. Particular attention is paid to the arrangement of suitable menus, which the patient must work out for himself. A blank page is inserted, which is to serve the purpose of recording the patient's questions and the proper answers. Additional recipes may also be added. The material presented has been used by the authors in mimeographed form for the instruction of their patients. The special diets have been arranged with a view to relieving the monotony of the diet and the satiety of the patient's appetite. A table of equivalents is also given for foods having the same food value as the original food for which they may be substituted, thus providing a wide variety of choice.

After discussing the nature and cause of diabetes, with the objects of treatment, the food principles and the use of food, the dietetic treatment in general is taken up. The administration of insulin with its dangers is described. The other subjects discussed include ketosis, acidosis and coma, body weight, infections, hygiene, traveling, uranalysis and the blood sugar. There is given a very extensive table of food analyses and also directions for home canning. This guide ought to prove very valuable to every diabetic patient.

FOCAL INFECTION

Why Infections? In Teeth, Tonsils and Other Organs. By Nicholas Kopeloff, Ph.D., Associate in Bacteriology, Psychiatric Institute, Ward's Island. New York & London: Alfred A. Knopf, 1926. Pp. xi-182.

This is a treatise on focal infection and apparently intended for the laity. It enumerates the sources of focal infection as found in the teeth, tonsils, nose, throat and sinuses, the ears, eyes, digestive tract, kidneys and bladder, and in the male and female genital passages. It is well written, in an interesting style that will captivate the reader, and the facts are well presented, even though the book is not written by a physician. It may well and unhesitatingly be recommended to the laity and even the medical student will find much of value in it.

THE NEW NATIONAL FORMULARY

The National Formulary. Fifth Edition. By Authority of the American Pharmaceutical Association. Preferred by the Committee on National Formulary of the American Pharmacutical Association. Published by the Association, 1926.

The National Formulary fills an important place in the field of what might be termed practical materia medica, for in its pages will be found approved formulas for many of the elixirs, syrups and solutions to which the physician is so apt to turn when confronted with problems of what to prescribe. The constant increase in the demands on the time of the medical student in the efforts of the teachers to keep the curriculum abreast of medical progress has resulted in an abbreviation of the time devoted to materia medica. As a consequence the young practitioner of today is frequently not so well informed in this field as was the graduate of fifty years ago. The wave of therapeutic nihilism, which, arising in Vienna, swept over the medical world, shows some indications of recession. There are signs of a somewhat more respectful attitude toward this branch of medicine of late years and the *National Formulary* offers assistance to the physician who wishes to make use of the modern materia medica but is not sure of his own ability to write a prescription which will not involve incompatibilities. A tremendous amount of conscientious work has been done by the committee which prepared the volume and this work is here made available to the physician at a comparatively slight cost.

This edition contains 549 formulas and sixteen descriptive chapters or paragraphs in Part I, while 188 articles are listed and described in Part II. The number of formulas given has been decreased by

thirty-five, while twenty-five more articles are listed than appeared in the fourth edition. This increase is due to the large number of deletions from the U. S. P. IX, the rule having been followed of listing in the *National Formulary,* for a time at least, all articles deleted from the *Pharmacopœia.*

Part III of the work contains detailed directions for various tests for identity and purity and for making those stains, reagents, culture media, etc., which are so important to the laboratory worker. In this part will also be found a number of tables, which will be of special interest to the manufacturing pharmacist, such as the percentage of alcohol which should be present in finished tinctures, fluid extracts, etc.

The book is well made, is well edited, and reflects great credit upon the committee and upon the publishers.

EUTHANASIA AND THE NOVELIST

Sorrell and Son. By Warwick Deeping. New York: Alfred Knopf, 1926.

In *Sorrell and Son,* a novel of the hour, the hero, a surgeon, caused the painless death of his own father, who is suffering from hepatic cancer. The fact is set forth as the praiseworthy performance of a filial duty by a son peculiarly attached to his father. The act is so out of keeping with the character of the young surgeon and so much at variance with the fundamental attitude of the medical profession that it mars an otherwise excellent and well presented novel. Had the young surgeon merely continued the administration of morphine in sufficient doses to insure relief from pain until such time as death came the story would have lacked in dramatic climax, but it would have been more true to medical tradition and more in keeping with his character.

The failure of the author to differentiate between the causing of death to be painless and the causing of painless death is another instance of the popular misconception of what is really meant by euthanasia, though that term is not used in the book. Under no circumstance is the surgeon justified in deliberately causing death. That is the basic attitude of the medical profession and one supported by popular approval. But where death is inevitable the surgeon is justified in making that death painless.

Edith Wharton, in *The Fruit of the Tree,* published some years ago, had a trained nurse deliberately administer an overdose of a narcotic, thus hastening the death of a chronic sufferer. This act was condoned by the author as justifiable, but the medical profession did not take that view, nor should it. That the surgeon is justified in diminishing the horrors of death by the administration of narcotics is admitted by all, but this does not mean that he may wilfully hasten death by the administration of an overdose of the narcotic.

Euthanasia is popularly defined as a happy death or a desirable death. The physician may do all in his power to diminish the frightfulness of the inevitable but must not hasten it. Aside from the contravention of medical tradition, the author has written a strong work which will be of special interest to physicians because it tells in detail of the education and training of a surgeon in London. The story of his education takes him through Cambridge and eventually London University.

There are several well drawn pictures of the operating room, accurate, dramatic, but not too detailed. One of these describes the first important operation performed by the young surgeon without supervision and another describes his first operation before the class. This was for a papilloma of the bladder. "A white blade drew a steady line that grew red upon the pale abdomen. The incision deepened, swabs were at work, retractors; forceps were clipped on; the unconscious and gently palpitating figure seemed surrounded by grave and interested faces and calm purposeful hands."

One wonders if the story accurately presents the social conditions of the time and place. The young heroine gives herself to her lover but declines marriage with him as tying her down so as to interfere with her career. The hero has previously had an affair with another girl, who goes into it quite deliberately without expectation of marriage. Another couple live together as lovers long before being married. It reads rather like Paris than London in this respect. The author suffers from a mild Americanophobia which manifests itself in occasional slurring references to Americans, but where he quotes an Americanism he misquotes, saying "Sick in the stomach" instead of "sick at the stomach."

Stephen Sorrell, the father, is an interesting and well drawn character, whose life is devoted to giving his son, the surgeon, his chance in life. The book makes interesting reading.

Medicoliterary Notes.

During the year 1925, the International Health Board of the Rockefeller Foundation has, according to its recently published Twelfth Annual Report, given assistance to public health enterprises in ninety-seven states and countries. It participated in infection and sanitation surveys, operations for the control of yellow fever and hookworm disease, field studies and experiments in malaria control, county and rural health work, the development of special divisions of public health services, and the establishment and maintenance of schools and institutes of hygiene and public health. It also provided 197 fellowships for training in public health for men and women from twenty-seven countries, supported field stations for the training of prospective health officers in methods of malaria and hookworm control and in other public health work, and contributed funds to the Health Section of the League of Nations toward the support of international interchanges of public health personnel, the maintenance of epidemiological and public health intelligence service, and the training of government health officials in vital and public health statistics.

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The Natural History Division of the British Museum in London has recently installed a small but interesting collection of models of disease bearing insects, including malaria, yellow fever and other mosquitos, the midge carrier of the sandfly fever, a small West African horsefly conveying Calabar swelling, two kinds of tsetse flies which carry the parasites causing trypanosomiasis and nagana, the house fly, plaque flea, body louse, two forms of ticks, and the itch mite.

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The municipal court of Berlin has recommended that a law be passed making it illegal for orchestras and other forms of music, including the radio, to continue playing in public places of entertainment after a comparatively early hour. The court declares that, under the exhilaration of music, the guests in cafés, restaurants and theatres drink alcoholic concoctions to excess. By the police closing hour, 1 a. m., the guests are in a quarrelsome mood, and argue loudly either with friends or other groups on the street, to

the detrimental disturbance of those who wish to sleep, whose health consequently suffers. The recommendation closes by saying that the court therefore decides it is necessary to order the curfew rung at an early hour on all forms of music, and, since liquor without music does not produce brawls, the hours during which liquor may be sold are not cut down.

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Prof. Louise Pound of the University of Nebraska has recently published a report of a speech study she has made which brought to light the fact that the word *yes* is fading out from the English language. A canvas of substitutes for it among a large group of young persons produced "all right," "you bet," "O. K.," and the various nasal sounds, such as "uh-huh," etc.

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It is related that George Bernard Shaw, a few days after his seventieth birthday, was roped into a drawing room party of a rather highbrow nature, at which the special attraction was a violinist. Said the hostess to Mr. Shaw, after the violinist had rendered one or two numbers: "Well, Mr. Shaw, what do you think of my discovery?" Replied Mr. Shaw: "I find in him a great resemblance to Paderewski." A painful pause. Then, "But, Mr. Shaw, Paderewski is not a violinist." "Exactly!" snapped G. B. S.—*New Yorker.*

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There are no polar bears or other animal life in the South Pole region, according to a recent statement attributed to the explorer, Stefansson.

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Don't Stop Until It's Tried: the Facts About Prohibition, is the title of a recently published book by Irving Fisher (Macmillan). Mr. Fisher has come to the conclusion, apparently rather reluctantly, that prohibition is the best available solution of the socalled "drink problem."

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That women can work faster and often more accurately than men, but that men have better powers of judgment, is stated as the result of a series of experiments recently made by Isabel Stewart at the Psychological Laboratory of Johns Hopkins University. Similar tests were given to school children, and the girls found superior to the boys in speed and accuracy of performance, but the boys outdid them in judging weights and distances.

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Another biography of Edgar Allan Poe, this time in two volumes, is a late publication of Doran. The author is Mary E. Phillips, who is said to have been working for twelve years on the book. Her search for material has covered every community in which Poe passed any time, not only in this country, but in England and Scotland. It is asserted that sixty-five per cent. of the contents of the work are here presented for the first time, and include many letters, records, documents and illustrations never before published.

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In a survey of caterpillars of the region, Dr. George E. Beyer of the Louisiana State Board of Health states that the most poisonous variety is the larva of the southern flannel moth and its northern variety. Some of the spines of this species are hollow and connected with a poison secreting cell, the toxic effect of which is exceedingly virulent. Accidental contact with this caterpillar by a human being may, according to Dr. Beyer, bring about numbness, pain and nausea.

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The lowly dachshund, banned from England during the World War, is once more in style, the London press reports. Dachshunds are being imported from Germany in such numbers that the craze threatens to eclipse the popularity of the police dogs or Alsatians.

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A new and enlarged edition of Jeannette Mark's book entitled *Genius and Disaster* has been issued by the Adelphi Company. Another similar work of recent date is Arthur Jacobson's *Revaluations: New Studies in Genius.*

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Dr. Charles Sheard of the Mayo Clinic, Rochester, Minn., has recently made public, according to the *Science News Letter,* a bloodless way of finding out what is going on in the bloodstream. The eye is a poor instrument for analyzing color, says Dr. Sheard. The eye can estimate the color in the skin itself, but there is also the color contributed by the blood, which is reflected by tiny capillaries in the skin surface. The only scientific method of finding out the rôle played by pigment and blood in the color of the skin is to use a color analyzing instrument. An accurate method of determining the color of the ingredients of the skin is expected to be of value in indicating the condition of the blood in cases of anemia, jaundice, Addison's disease, and in various diseases in which the skin turns bluish for lack of oxygen in the blood.

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Some Eskimos are the possessors of as many as twenty different names, says the *Science News Letter.*

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Curiosity on the part of the police of the Free Port of Hamburg as to why the Chinese should buy their tombstones in Budapest led to the discovery of an attempt to smuggle more than two hundred pounds of pure heroin through the German port to Shanghai, according to a report to the *New York Times.* Metal boxes containing the drug were painted white and arranged in a mosaic forming fanciful gravestones. One policeman, however, had travelled in the Orient, and he felt that either the styles in tombstones had changed recently in China or the present shipment was a fake. Upon the discovery of the drug mosaic, the police put out a drag net and into it fell a man, claiming to be an American named James Dolan. His association with questionable characters and his lavish mode of life directed suspicion against him and he was arrested. The police wired to a number of European capitals the names and descriptions of others they believed to be leaders in an international drug ring.

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One of the significant books of the summer was Dr. George W. Crile's *A Bipolar Theory of Living Processes,* published by Macmillan.

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At the recent convention of the American Gas Association held at Atlantic City, a report was read giving the results of a questionnaire that had been previously sent out by the association, in an endeavor to discover the most popular national dishes. These proved to be pie and angel cake. Missouri proved to be partial to all kinds of Spanish concoctions, New York loves pie and cake, and New Jersey was not able to decide on its favorite dish.

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New York City could do well to imitate Paris in an attempt to check the nuisance of the much used taxi horn. After a careful study of the situation, M. Morain, the Prefect of the Police, has brought about the passage of an ordinance which makes illegal the use of any but "a horn sonorous, uniform, and producing a sound low in the scale, which it will be forbidden to repeat." Many of the citizens of Paris have heartily approved the prefect's attitude and efforts, and are cooperating with him in the attempt to do away with the nuisance, which is also a menace to health.

* * *

Recent publications of interest to the medical profession include: *Alcohol and Longevity,* by Raymond Pearl, Ph.D. (Knopf); *A Psychological Study of Cancer,* by Elida Evans (Dodd, Mead); *Mental Tests,* by Frank N. Freeman (Houghton, Mifflin); *Social Anthropology,* by Geza Roheim (Boni & Liveright); *Essays in the History of Medicine,* by Dr. Karl Sudhoff (Medical Life Press); *Delusion and Belief,* by Dr. C. MacFie Campbell (Harvard University Press); *Industrial Diseases;* Rapid Reference Manual, especially arranged for the use of the medical profession in New York State by Dr. C. T. Graham-Rogers, Medical Inspector of Factories, and published by the Division of Industrial Hygiene of the New York State Department of Labor; *Delinquents and Criminals,* by Dr. William Healy and Augusta F. Bronner, Ph.D. (Macmillan); and the novel, *Our Doctors,* by Maurice Duplay, translated from the French by Dr. Joseph Collins.

* * *

Dr. Rosenbach, of Philadelphia, recently purchased at the Britwell Court Library sales in London five copies of *The Treasure of Poore Men,* each of a different edition, all in black letter and all printed before 1550. The work is a collection of medical recipes. The aggregate sum paid was £695. All are quite rare; less than a dozen copies of the work are in existence.

Abstracts from Current Literature

PHYSIOTHERAPY

Ultraviolet Ray Therapy in Tuberculosis of Children.—Joseph H. Marcus (*Archives of Pediatrics,* June, 1926) summarizes his experience in treating tuberculosis in children as follows:

The glandular type of tuberculosis, especially cervical, bronchial, and mesenteric, are amenable to treatment, the results obtained ranging from fair to excellent. In the latent pulmonary type, the improvement noted was a resultant increase in weight accompanied by a state of euphoria. The existent pathology was not influenced, as checked up by physical examinations and röntgenographic interpretations. Ultraviolet ray therapy, while not specific, is the most valuable recent contribution to the treatment of certain types of tuberculosis, and should not be used as a distinct and separate entity. It is the duty of the physician to educate the people to the new knowledge of sunlight, both natural and artificial, as a means of health, that it is a stimulant, a tonic and nature's universal disinfectant.

Method of Treating Asthma by Radiation.—S. Gilbert Scott (*British Medical Journal,* June 5, 1926) has no new theories as to the causation of asthma, but the results obtained from the method described leads him to believe that the primary cause will eventually be found to be metabolic, with or without some local irritation reflex. He believes the influence of radiation on asthma to be complex, and that it is not a direct influence on lung tissue, but some profound indirect or secondary change affecting the whole body.

The technic includes the following factors: The dose is 10 through 3 mm. aluminium; a low voltage; a large radiation field. This dose is administered once a week to the average case—twice a week if the case is severe. After the fourth dose an interval of two weeks is allowed, then it is repeated once a month for four months; after that the patient is instructed to come up as soon as any wheezing or "tightness" of the chest is noticed, when a further dose is given.

The immediate effects are experienced within a few hours of the treatment: tightness of the chest is relieved first, followed in twenty-four hours by an increase in the phlegm. With the small dose no nausea is experienced. All the patients treated obtained definite relief. No blood changes were noted. The number of treatments necessary to get rid of the wheezing varied.

A New Development in Radium Therapy: The Application of the Later Disintegration Products of Radium to the Treatment of Certain Skin Conditions.—John P. McHutchison and W. Herbert Brown (*Lancet,* April 10, 1926) report the use of radioelements, radium D and radium E, which were extracted from used radium emanation tubes, and in equilibrium together were prepared for medical use in the form of applicators of different kinds. Such applicators have been found to exert a beneficial action in the treatment of lupus erythematosus and of various types of nevi. Conditions like eczema and psoriasis will also respond, but it has not been found convenient to treat large affected areas by means of applicators.

The radiation from radium D and radium E has the unique property so far as radium treatment of skin conditions is concerned, that it is all absorbed by the part being treated, since its effective penetration is only about 3 mm. of tissue. Radium D and E applicators retain their strength and may be used for many years; sixteen years elapse before the activity declines to one half of its original value.

Radiotherapy in the Flajani-Basedow Disease.—E. Milani pronounces radiotherapy (*Revue Française d'Endocrinologie,* February, 1926) a little known method of treating this disease, but nevertheless a method of precision and comparable in its results with the most favorable surgical statistics. He himself reports 1080 cases treated by radiotherapy, presenting only sixteen per cent. of failures and seven per cent. of recurrences. The principal indication for its use is in early and primary cases. The results are less satisfactory in Basedowified goitre, and it is contraindicated in cases of irregular form and in stenotic goitre. The nervous, vasomotor, and secretory symptoms first show improvement, together with metabolic and blood changes. While tachycardia and tremor are easily relieved, the goitre and exophthalmos are far more rebellious. The dose cannot be stated mathematically. Small doses are always stimulating and find little application here. Biological tests should be employed to estimate the degree of improvement.

In discussing the paper, N. Pende insisted on the nature of Basedow's disease as an endocrine sympathetic syndrome. Surgical intervention appears to him ineffective, because directed against the thyroid alone. By exclusive medical treatment he has obtained excellent results in 167 patients. The full treatment consists in combining psychotherapy, a diet of fats and carbohydrates, radiotherapy, and mixed organotherapy.

Röntgenographic Diagnosis in Gynecology.—I. F. Stein (*Surgery, Gynecology and Obstetrics,* 42:1) states that röntgenography after gas inflation of the abdomen is of material aid in diagnosis. In obèse, uncooperative, ignorant, or mentally deficient women it may be the only means of accurate diagnosis before operation. Its value lies not alone in positive evidence but also negatively in allaying suspicion of pregnancy or pelvic lesions with few palpatory findings. As a matter of record it has great value. By a careful technic the uterus, ovaries and falloppian tubes, round ligaments, and bladder can be clearly depicted on the x ray film, after surrounding the viscera with gas. Tumors are thus readily differentiated.

Carbon dioxide is preferred to air or oxygen because of more rapid absorption. All three gases are safe. The transuterine route is preferable when the Rubin test proves the tubes permeable. The latter procedure is of distinct value in sterility both diagnostically and therapeutically.

Treatment of Rodent Ulcers by Radiation.—R. W. Lewis (*Annals of Surgery,* Vol. 74:2) asserts that: radiation treatment of basal cell epitheliomata is an excellent method because of its absence of operative procedure, its simplicity, excellent cosmetic results, and high percentage of permanent cures. Statistically, there is little difference in the ultimate results between treatment by radium and that by surgical excision. The treatment by radiation of those lesions where bone or cartilage is involved, or where the lesion is four cm. in diameter, or larger, is inadvisable. Treatment by radium should be undertaken in these conditions only when a surgeon, skilled in the treatment of cancer, finds the patient, for any reason, unsuitable for operation. The patient's risk, in treating, through mistaken diagnosis, a squamous epithelioma, is probably little, if any, increased, if the rule be observed to refer promptly for surgical removal any lesion which increases in size after radiation, or any lesion which does not respond immediately and strikingly to one or two doses of radiation.

Clinical Application of Ultraviolet Light.—Edwin T. Wyman (*Boston Medical and Surgical Journal,* August 26, 1926) says that the quartz lamp can be used as a substitute for sunlight and has the advantage of being available regardless of sunshine and weather. It can be given indoors so as not to subject the infant or child to the cold, and the doses can be more accurately gauged. There is, however, a very real danger of becoming too enthusiastic about ultraviolet therapy rays lest this form of treatment be looked upon by the physician and his patient as a quick and sure cure for all ailments. It can be said, however, that ultraviolet light therapy has a specific action in treating rickets and spasmophilia and is a valuable therapeutic agent in the treatment of tuberculosis of the mesenteric and bronchial glands and tuberculous peritonitis. Further investigations will be required in other fields before definite conclusions can be drawn.

The Present Status of Radiation Therapy in Carcinoma.—George W. Holmes (*Boston Medical and Surgical Journal,* August 26, 1926) maintains that each case should be carefully studied and a definite plan of treatment decided upon before starting any single form of therapy. Most curable cases are better treated surgically, but the surgeon should not attempt a radical cure where complete removal of the tumor is impossible. These cases are better treated by radiation alone. Preoperative rediation properly used probably increases the chance of surgical cure. Postoperative radiation has failed to prevent recurrence, and when prolonged

has caused permanent damage to the skin. In the treatment of recurrent and inoperable cases, relief of distressing symptoms should be the main object of the treatment. It is usually inadvisable to use heavy or prolonged doses in an attempt to cure.

Steam Cautery.—H. S. Souttar (*Lancet,* April 17, 1926) found that results similar to those obtained by diathermy can be obtained in a much simpler manner by the slow penetration of heat from a cautery maintained at a low temperature, and this is very conveniently done by a current of dry steam. The author has constructed an apparatus the applicator of which is maintained constantly at a temperature closely approximating to 100° C. The applicators vary in size from small points up to metal discs three inches or more in diameter.

So long as the applicator is kept in contact with the tissues heat slowly penetrates and produces coagulation, the depth of penetration for any one applicator being simply a function of the time and of the permeability of the tissues. With the large applicators and on moist tissues penetration takes place at the rate of about one inch in ten minutes. In contrast to diathermy very large applicators may be used, the rate of penetration being slightly greater with large applicators than with small ones. The author thinks that this is the most potent appliance available at present for dealing with large masses inoperable growth. The rate at which great masses of fungating carcinoma coagulate and disintegrate before it is astonishing, and yet in the end dense coagulum is left which gives complete protection to the deep tissues and allows time for their recovery, for the closure of large vessels, and for the formation of granulation tissue. Small superficial growths and ulcers can also be treated with certainty and yet without risk to the underlying deep structures. This treatment is especially applicable to epithelioma of the skin, particularly where this arises on a scarred surface, as after the treatment of lupus and similar conditions by x rays.

SURGERY

Plastic Surgery of Upper Lip and Nose.—V. P. Blair (*Surgery, Gynecology and Obstetrics,* 42:1) presents several illustrated cases in which he has met with creditable success by using the following plans to build up the bone about the orifice of the anterior nares: The implantation of cartilage; the use of a dental prosthesis after the soft tissues have been liberated from the periosteum of the maxillary bone and the sulcus has been lined with Thiersch grafts; the cheeks have been liberated from the maxillas and sutured in a forward position; and the lining of the nasal tube has been lengthened with a flap from the forehead, arm, or the mucosa of the mouth. The soft tissues have been drawn forward and suspended in this position, either by the implantation of cartilage or bone between the skin and framework of the dorsum of the nose, or by suturing the liberated columella in a forward position on the lower border of the septum.

There is a type of retracted nose in which the septum and the columella are both short, part of the cartilage of the latter being buried in the lip. The columella is also short in the complete double congenital cleft of lip and palate. In these cases the columella will have to be lengthened in order to bring the nose forward. In some cases the external nose was so small that it was necessary to piece out the covering as well as the lining in order to obtain a desirable result.

Perineal Excision in Cancer of Rectum.—J. P. Lockhart-Mummery (*British Journal of Surgery,* 14:53) presents a tabulated report on two hundred cases, showing that when the operation is performed under the most favorable conditions the mortality is only three per cent., and that the percentage of cures on a five year basis is fifty per cent.; while where specially favorable picked cases alone are dealt with the proportion of cures on a five year basis reaches the very high figure of seventy-three per cent. The operation is briefly outlined as follows:

The operation is done in two stages, a permanent colostomy being performed either a week beforehand or at the time of the resection. Either spinal or regional anesthesia is used, aided by gas and oxygen or twilight sleep. The patient is placed in the semiprone position, head down, and if a male a catheter is tied into the bladder. The anus is first closed with a purse string suture passed subcutaneously with a curved needle, and an incision is made from the base of the sacrum, passing around the anus and about one inch from it. The coccyx is removed by dissection, and the deep fascia divided transversely just in front of the sacrum. Both levatores ani muscles are divided close to the pelvic wall with scissors, and the rectum is then dissected off the vagina in the female, or from the urethra and prostate in the male, until the peritoneum is reached. The peritoneum is opened, and as much bowel drawn down as possible. The mesorectum is clamped off as far back as can be managed, and divided. The clamps are tied off, and, after dividing the peritoneal coat of the pelvic colon and stripping it back for a short distance, the bowel is crushed and divided with a cautery. The stump is ligatured and turned in with a purse string suture, and the wound in the peritoneum closed with catgut stitches. The wound itself is closed without drainage in most cases. In a few a small rubber wick is inserted. The wound is not dressed for forty-eight hours, and then the blades of a pair of dressing forceps are introduced between two of the stitches, and any accumulated fluid allowed to escape. If the wound remains quite clean, it is allowed to heal by first intention; but if the accumulation of serum continues, a stitch is removed, a small piece of drainage tube is introduced, and the cavity kept irrigated with weak Dakin or Milton solution. The patient is allowed out of bed on the fourteenth day, and is generally able to return home in from three weeks to a month.

The Influence of the Vermiform Appendix on Gynecological Surgery.—R. S. Statham (*British Medical Journal,* May 8 and 15, 1926) concludes that the appendix is very likely to be affected by pelvic inflammations and may be the cause of salpingooophoritis and its consequences more frequently than is expected. The appendix should be suspected and examined in all cases of pelvic peritonitis, and it should be removed if it is in any way diseased, to prevent further trouble at a later date. Even when the operation is performed for a condition which is not inflammatory the appendix should be examined; twenty per cent. of the author's series show definite disease of this organ, and two out of thirty-one appendices removed were reported as malignant. Acute pyosalpinx is frequently complicated by acute appendicitis and vice versa. Oophoritis as a disease, and apart from pelvic peritonitis, should not be diagnosed. If at operation the ovaries are found to be merely enlarged and not adherent, then the appendix is most likely to be the cause of the patient's pelvic pain. In corroboration of this, the number of oophorectomies performed at the Royal Infirmary has fallen to a quarter of the number which were done before the World War, and the results as to the cure of chronic pain have very greatly improved. The author advances with great diffidence that it is just as well to remove a pelvic appendix whenever found, even if it appears quite healthy to the eye.

Surgery of the Gallbladder.—W. J. Mayo (*Surgery, Gynecology and Obstetrics,* 43:6) states that in the Clinic cholecystectomy is performed in more than ninety per cent. of cases of ballbladder disease as against cholecystostomy in less than ten per cent. In average cases, if cholecystectomy can be performed as safely as cholecystostomy, it brings about permanent cure in a much higher percentage.

It should be remembered that after cholecystostomy the gallbladder becomes fixed in adhesions, and the mere absence of symptoms is no indication that it is functioning. Of the patients for whom we perform cholecystostomy rather than cholecystectomy, we expect a certain number will later require removal of the gallbladder.

In cases of acute cholecystitis, when the gallbladder is very large, distended and edematous, with localized peritonitis from complete blockage at the cystic duct, the author says he has had the best results from direct dissection of the cystic duct at the common duct, early closure of the cystic duct with a pair of forceps, and removal of the entire gallbladder, which is easily enucleated with its contained stones and septic material.

When there are stones to be removed from the common duct in the presence of jaundice, it is not wise to remove the gallbladder at the same time if removal can be avoided.

Accidents in performing cholecystectomy are most often due to insufficient care in locating and isolating the cystic duct and the cystic artery. It should not be forgotten that the cystic duct has is origin to the liver side of the pelvis of the gallbladder and that the cystic artery usually has its position to the inner side of the duct. Adhesions between the pelvis of the gallbladder and the common duct may drag the latter upward so that it may be mistaken for the

cystic duct, and in the course of operation a piece may be removed accidentally from the common duct. Again, if the cystic artery escapes and retracts deeply, in the attempts of the operator to catch it quickly with rat tooth forceps, the latter may bite a piece out of the hepatic duct, leaving permanent biliary obstruction, the repair of which is one of the most difficult problems in surgery.

The incision we use is based on that of Bevan, beginning as high as possible between the ensiform cartilage and the costal margin and passing down about two centimetres to the right of the median line, and of sufficient length to enable easy manipulation and also to permit the examination of the appendix and its removal if necessary. The reason this incision is advisable is that the common duct in its preduodenal portion is nearly transverse, but on passing under the duodenum into or behind the head of the pancreas it descends almost parallel to the long axis of the body close to the median line of the body. In the male, the distended gallbladder usually extends downward and to the right toward the anterior superior spine of the ilium; in the female, it more often extends toward the umbilicus and to the median line.

The author says he has found very helpful the suggestion made by L. L. McArthur some years ago to leave the peritoneum and the posterior aponeurosis of the rectus muscle uncut in the lower one fourth of the incision. These tissues can be retracted readily, and protect the lower part of the wound against hernia. Whereas hernia frequently used to follow operation on the gallbladder, he had seen none in the lower part of the incision since he had followed this practice. The liver usually comes down under the upper part of the incision, so that only a small space is unprotected.

Operative Treatment of Thenar Paralysis.—H. H. M. Lyle (*Annals of Surgery,* 84:2) offers a technic which attempts to combine the advantage of Steindler's flexor plasty combine the advantage of Steindler's flexor plasty with the good points of Ney's operation, as follows:

1. An incision is made over the extensor brevis pollicis extending from its insertion to a point where this tendon emerges from the posterior annular ligament, the tendon of the extensor brevis pollicis is then divided at this level. An anterior incision exposing the flexor carpii radialis at the wrist is made, the subcutaneous tissue is tunneled obliquely from the distal edge of the anterior annular ligament to the insertion of the extensor brevis pollicis and the cut end of the extensor brevis pollicis threaded through this tunnel, passed under the annular ligament and sutured to the tendon of the flexor carpii radialis above the annular ligament. The pulmaris longus, if present and sufficiently developed can be employed instead of the flexor carpii radialis.

2. Flexor plasty. A palmar lateral incision is made over the tendon sheath of the flexor longus pollicis, exposing it from its insertion to a point just below the head of the first metacarpal. The tendon sheath is opened and the tendon split longitudinally, the outer half is freed from its insertion and withdrawn from the sheath, the sheath is then closed over the internal half. The external half is carried subcutaneously around the outer side of the base of the first phalanx and sutured. This can be readily done as the previously performed incision for the exposure of the insertion of the extensor brevis pollicis gives an excellent exposure for the flexor anchorage. The thumb is then placed in the functionating position and fixed in plaster. Gentle active movement is begun on the twelfth day; all support removed on the twenty-first day.

The author reserves his operation for the cases in which it is essential to have a powerful pincer action. In the ordinary case he employs the simpler methods of Steindler or Ney.

Short Mesocolon in Gastric Surgery.—F. S. Mathews (*Annals of Surgery,* 84:2) describes four cases in which his procedure was either anterior or posterior gastroenterostomy using a considerable loop of jejunum above the anastomosis and in each case but one an enteroanastomosis was added to avoid the possibility of retention of intestinal contents in the segment of bowel above the gastroenterostomy. Following the operation there was no suggestion of vicious circle in any of the four and the patient in whom no enteroanastomosis was made has done quite as well as the others. Nevertheless an enteroanastomosis is an added security when a long loop has to be used.

When one encounters a case of very short transverse mesocolon, it will probably not be discovered until the work on the stomach has been completed. Then when the omentum is lifted up with the expectation of drawing the transverse colon immediately into the wound, one sees instead the large expanse of the posterior wall of the stomach covered only by a single leaf of the omentum. Posterior or anterior operation can easily be done. The posterior one would seem to be more desirable, especially if the omentum is of considerable size. But whether posterior or anterior operation is employed, a short loop of small bowel would seem undesirable because of the possibility of its being compressed by the descending colon. The question of whether the enteroanastomosis should be added may seem a debatable one. It has always been added in carcinoma cases where an anterior gastroenterostomy had to be made high on the stomach wall. The enteroanastomosis whether by suture or Murphy button adds very little to the length of operation and may be the means of sparing the patient a second operation.

Importance of Hematology in Surgery.—A. Piney (*British Journal of Surgery,* 14:53) lays down the following rules as indications which will correspond accurately in almost every case to the course of an infective process:

1. Slight neutrophilia with very little nuclear shift and with persistence in eosinophils is of good significance, and may not indicate a pathological state at all; e. g., such a condition occurs in pregnancy, where, however, the percentage of eosinophils may drop without any appreciable fall in the absolute numbers of this type of cell; this applies mainly to the later months of gestation.

2. Slight or well marked leucocytosis with definite nuclear shift of moderate degree, decrease of eosinophils, and slight decrease in the number of lymphocytes indicate a condition in which further examinations would be necessary before a prognosis could be given, although there could be no doubt of the presence of infection.

3. High leucocytosis with great shift to the left tending to progress in the same direction, with very great decrease or even disappearance of eosinophils and reduction of lymphocytes, is indicative of a grave condition, which may, however, still be recoverable. It is particularly when the young forms are in excess of those of band type that the prognosis is grave.

4. Recovery does not occur in those cases in which there is progressive fall of the total number of leucocytes with an extreme degree of shift to the left, total absence of eosinophils, and well marked lymphopenia.

5. Progressive eosinopenia with rising leucocytosis is never of good significance, unless

6. There is reappearance of the eosinophils and fall of the neutrophils, with reversion of the nuclear picture to normal, together with rise of the lymphocytes. It is clear that (5) represents the blood picture at the onset of an infection, and (6) the changes as it is overcome.

7. The development of lymphopenia during long continued leucocytoses is of bad significance.

8. Sudden fall of lymphocytes in association with increasing neutrophilia and progressive nuclear shift to the left is of very grave significance, as is also a sudden fall of lymphocytes, occurring during the course of a progressive decrease of the total number of leucocytes.

9. Lymphocytosis following neutrophilia, and accompanied by progressive passage of the nuclear shift towards normal and by eosinophilia, indicates recovery.

The Snare in Abdominal Surgery.—C. E. Farr (*American Journal of Surgery,* 1:1 new series) pleads for a revival and extended use of this instrument, in the following terms:

A rapid survey of the abdominal field will readily disclose a number of situations in which the snare can be profitably used. Its small size, its ease of handling, its firm grip of the tissues and the readiness with which that grip can be released, all commend it highly.

In pylorectomy the handling of the duodenal stump is of the utmost importance. Except in the Billroth 1 method, this stump must be crushed and carefully inverted to prevent leakage. Here the snare is ideal in safety, convenience and speed. The lumen of the gut can be closed by ligature, suture, or a combination of the two. The wire of the snare is loosened only after the inversion is completed and the sutures nearly drawn tight.

For temporary control of hemorrhage in large pedicles,

masses of omentum, etc., the snare can be used with safety and speed. After the removal of tumor, cyst, or omental mass, one can clamp and ligate the exposed vessels separately at his leisure, or pass a mass ligature or suture. No time is lost and the exposure is far better than that obtained by the use of heavy crushing clamps.

In resections of the bowel, especially the large bowel, the snare is readily adaptable to the socalled aseptic methods of resection and suture. The end to end, end to side, or lateral anastomosis can be quickly and safely performed with a minimal chance for leakage.

The great advantage of the snare is easily demonstrated, in that the wire can be loosened and withdrawn after the inversion stitch is completely placed and nearly drawn tight. In end to end anastomosis the primary and secondary sutures can nearly all be placed and tied before the snares are released and withdrawn. The opportunity for contamination is almost nil.

Occasionally nephrectomy is a most difficult operation because of inability to expose the pedicle and safely apply clamps. In such cases the wire of a snare can often be laid in place and easily set home. The same is true in high amputations of the rectum. The added inch of bowel that can be safely removed in this way may prove the deciding factor for ultimate cure. A further advantage is that, if needed, the snare may be left in situ until its work is done.

Easy Method of Performing Tracheotomy.—Kenelm H. Digby (*Lancet*, January 16, 1926) suggests the following technic for performing tracheotomy:

The child is held on its back on a flat surface. An assistant on the child's left places his right hand on the child's forehead and his left hand on the child's occiput and extends the head to the maximum point. The chin is raised so far that the front of the neck is a flat surface from the sternum to the point of the chin. A median skin incision is made 1.5 inches long vertically downwards starting from the upper border of the cricoid cartilage. The deep fascia uniting the sternohyoid muscles is divided vertically. The cricoid cartilage is exposed and the fascia, attached to its lower border, is incised transversely to expose the commencement of the trachea. A single closed pair of pressure forceps is passed downwards and backwards close to the trachea and behind the isthmus of the thyroid gland. A very slight opening and shutting of the forceps may assist their passage. The tissue thus raised is clamped close to the middle line first by one pair of forceps and then by a second pair placed parallel. The fascia and thyroid isthmus between the forceps are then divided and the two pressure forceps are each rotated in a lateral direction through 90 degrees and the handles are slightly depressed so as to raise the points. The rotation of the forceps usually peels the tissues from the trachea sufficiently to expose its anterior aspect, but a touch of the knife at either side will fully lay bare the front of the trachea. As the thyroid gland is intimately connected with the trachea and the cricoid cartilage, this maneuvre raises the trachea to the level of the skin, exposing the first four rings with utmost clearness. The vertical incision through the second, third and fourth rings should not be made by the "guarded stab" but should be gently incised with the knife held penholder fashion, the little finger of the right hand resting on the upper border of the manubrium. The stab is to be avoided because the trachea is flattened anteroposteriorly by thus being brought to the surface, and the posterior wall would be in danger.

Breast Operation with Endotherm Knife.—H. A. Kelly and G. E. Ward (*Annals of Surgery*, 83:1) assert that breast operations can be performed by this method without the use of a single ligature. They list the advantages as follows:

1. Lymphatics, capillaries and small bloodvessels are sealed, limiting the number of clamps applied. There is reasonable hope that this closure of the lymphatics will lessen the liability to local recurrences.

2. Few or no ligatures are used. The elimination of ligatures helps keep hands out of the wound. The operation can thus be done with hands, at a distance, lessening the chance of infection.

3. Primary union is the rule; the actual depth of tissue destruction on each side of the acusector is one tenth millimetre. It is easily possible that primary union is promoted because of sterilization of the skin edges.

4. The reduction of ligature material is no mean economical saving.

Erythrocyte Reaction in Surgery.—E. H. Rubin (*Surgery, Gynecology and Obstetrics* 42:5) has found that in surgery the erythrocyte sedimentation reaction is a more reliable indication of the condition of the patient than the temperature chart. Its diagnostic and prognostic value were secondary to its value in indicating the acuteness of a process. Extrasurgical complications such as syphilis or tuberculosis tended to maintain high readings in spite of the improvement or even cure of the surgical affection. In the absence of such complications, repeated tests may guide in the discharge of patients, although for many reasons it would be impractical to keep patients in the hospital until the reaction had reached normal limits. Because the test indicates the severity of tissue destruction, it should be of value in determining the advisability and time for operation.

Endoaneurysmoraphy.—R. Matas (*Surgery, Gynecology and Obstetrics* 41:6) advocates this type of operation as the simplest, surest, and safest method in his experience. He says that the surgeon should be eclectic in his attitude. He should choose the simplest means by which he may suppress the disease. It is in adopting this principle that the author says that he always begins an attack on the innominate, the subclavian, the carotid, the iliac, and the iliofemoral aneurysms, by first occluding the main artery with an aluminum band or, preferably in innominate and left subclavian aneurysms of the first or intrathoracic portion, by tape ligature, without interfering directly with the sac.

It is admittedly a serious enough matter to apply a ligature upon the innominate, or a subclavian, especially at the origin of these vessels, but the procedure, difficult as it is, is far less dangerous or risky an undertaking than to attempt to obliterate or extirpate the aneurysmal sac at the same sitting.

It should be borne in mind that in probably eighty to eighty-five per cent. of these cases, the simple occlusion of the main artery is sufficient to obtain a cure of the aneurysm. If a relapse follows, it is then time enough to obliterate or extirpate the sac.

In the young with aneurysms of direct traumatic origin who are free from syphilis or other constitutional taint, and especially in dealing with arteriovenous aneurysms, the author does not hesitate, in a general way, to attack the aneurysm by a direct free incision into the sac, followed by the suture of all the communicating openings within the sac. But, even then he never attempts such a procedure without the most thorough control of the main or injured artery, above and below the sac, by preliminary provisional hemotasis, with clamps, bands, or temporary elastic ligatures.

ANESTHESIA

Nonvolatile Aliphatic Compounds in General Anesthesia.—Robert K. Lambert (*Lancet*, January 16, 1926) suggests that by the preliminary use of nonvolatile aliphatic compounds in general, and more particularly by a mixture of isopral and hedonal, the following benefits may result: 1. The patient may be made drowsy and content, or completely somnolent before leaving the ward. 2. The completion of the anesthesia by gaseous anesthetics may be facilitated, and the duration of their use be reduced. 3. After operation, the patient may fall into prolonged and healthy sleep. Because up to date only small and tentative doses have been administered to man these benefits have not yet been obtained, but the results of animal experimentation encourage the hope that they will be found to accrue.

The Blood Nitrogen in Spinal Anesthesia.—Abadie, Baldous and Dornier (*Presse médicale*, March 27, 1926) find that operations conducted under spinal anesthesia are always followed by an increase of blood nitrogen lasting, on an average, one week. Important factors in this azotemia are the operation itself and the previous condition of the patient. The increase of blood nitrogen is much greater after severe operations, and is also more pronounced in patients with renal or hepatic impairment and in old age. The spinal anesthesia itself, however, also plays a part in the azotemia. The latter is notably greater with stovaine than with novocaine. While it seems unjustifiable to state that spinal anesthesia is without effect on the kidneys, the procedure nevertheless retains many advantages over the general anesthetics, and should not meet with disfavor on this account. Nor should stovaine be abandoned, for it has advantages in its rapidity and constancy of action. Furthermore, in some operations on the viscera it is useful in lowering the blood pressure, thus facilitating the operative

procedure and rendering it almost bloodless. In future, however, novocaine should be substituted for stovaine in patients whose kidneys or liver seem especially weak. In such patients, the inconvenience of having to wait ten or fifteen minutes more for proper anesthesia is more than counterbalanced by the greater assurance of safety in respect of the functions of the liver and kidneys.

Adrenalin in Ear, Nose and Throat Surgery.—G. Laurens (*Bulletin de l'Académic de médecine,* November 24, 1925) discusses the toxic effects that may be produced by adrenalin unless certain precautions are taken. During the operation these effects may consist of pallor, often with faintness and small pulse, accelerated heart action, and frequently a sharp nuchal head pain, with or without dizziness. Twice the author even witnessed epileptoid convulsions. These toxic manifestations of bulbar ischemia seem attributable to introduction of adrenalin into the intracranial circulation and possibly to unintentional intravenous injection. They generally appear one or two minutes after the injection, sometimes last fifteen minutes, and subside either spontaneously or after a few injections of camphor in oil or of ether. They result almost always from submucous intranasal injections of adrenalin. Postoperatively the drug may, if used in excessive amounts, lead to secondary hemorrhage and the formation of hematomas, which may suppurate and require reopening of the wound and ligation. Minor effects are transitory hydrorrhea, dental neuralgia and the formation of pseudomembranous scabs. To obviate such untoward results it is necessary to use only pure, fresh adrenalin solutions, to be added to the procaine or cocaine just before use. Old, deteriorated solutions are less vasoconstrictive but more toxic. Local applications of adrenalin, even in unusual quantities, only very exceptionally cause toxic symptoms, but in subcutaneous and especially submucous injections it is wise not to exceed twenty-five drops of 1:1000 adrenalin in 100 units of procaine solution. In sensitive or pusillanimous patients the injection should be made very slowly and cautiously. In nasal surgery, in submucous injections, especially in the ethmoid region, abrupt introduction of adrenalin and, in particular, injection of large amounts into the septum must be absolutely avoided. The most reliable measure for obviating difficulties is to apply 1:1000 adrenalin solution over the surface of the mucosa a few minutes before the actual injection. A barrier is thus established against absorption of the drug. Further, the injection should be made very slowly and evenly. With these precautions the author has practically eliminated all untoward effects from adrenalin in his surgical practice.

Intravenous Anesthesia by Allylisopropylmalonylurea.—P. Fredet (*Paris médical,* December 5, 1925) describes this drug as a rapidly acting anesthetic with effects persisting for a few hours. A ten per cent. solution of the drug is used; the drug is brought into solution by addition of a slight excess of diethylamine, and the solution stabilized by further addition of a little alcohol and glycerin. The drug is carried about in the blood chiefly by the blood cells and has a strong affinity for the nerve centres; but little of it is taken up by the body fat, liver and kidneys. It is eliminated unchanged in the urine. The elimination begins very promptly, but is slow, some of the drug being still found in the urine after ten days. The respiration and circulation are but little affected by this anesthetic. There is a slight rise and secondary fall in the respiration and pulse rates. The blood-pressure descends slightly after the injection, but rises gradually toward normal during the operation. The hepatic and renal functions are practically unaffected, as shown by various tests. The drug is not relied on as the sole anesthetic, but its action is supplemented by other agents which perfect the anesthesia. A hypodermic of one to two centigrams of morphine hydrochloride in one per cent. solution is first given, preferably with two thirds to three fourths milligram of scopolamine hydrobromide. Twenty to forty-five minutes later, the solution of allylisopropylmalonylurea is injected slowly in a vein at the elbow. In adults in good condition the dose is one-tenth mil. of the solution per kilogram of body weight, up to a maximum of seven mils. In aged or cachectic persons, four mills should not be exceeded. About five minutes after the injection, a few whiffs of chloroform or ether are given. The operation is begun about ten minutes after the injection. When the incision is finished, the inhalation anesthetic can generally be dispensed with, though a few further whiffs may be required later if the patient should move or at the end of the operation, during the suturing. By this method, which the author has applied in ninety-one human cases, an excellent anesthesia is obtained which lasts two or three hours and permits of ready execution of such operations as hysterectomy, operations on the liver and stomach, operations on the extremities, such as resection of the knee, etc. After the operation the patient continues to sleep quietly or is somnolent for four or five hours. Vomiting is exceptional; therefore the patients can be fed up to the time of operation and can take fluid and food immediately after, thus obviating starvation, acidosis and thirst. For operations such as radical cure for hernia, appendicitis, etc., requiring only a shorter anesthesia, the author continues to use chloroform or ether.

Albromine, a New Local Anesthetic.—Rolf Roman (*Hygiea,* April 15, 1926) after giving a brief general retrospect of the development of surgical anesthesia and particularly local anesthesia by means of cocaine and later novocaine, proceeds to give his experience with an anesthetic of more recent date named *albromine* by its originator, R. Eckermann, Ph.D., D.D.S. It is stated by him to have been empirically obtained and to consist of a colloidally transformed cocaine hydrochloride, treated under special conditions with an excess of phenylurethane, the latter having been previously colloidally prepared. Leaving it to the originator to deal with the chemical composition of this preparation and related questions in his own publication, he considers its usefulness from the point of view of surgery. Reference is made, however, to some experiments on animals in which a solution of albromine (0.025 per cent.) is shown to be more effective and yet more easily vaporized than a similar solution of cocaine or novocaine; its effect is found to be 20 times stronger than cocaine and more than 20 times stronger than novocaine. Empirically the maximum dose of albromine for a human adult, subcutaneously injected, is 250 c.c. of a 0.5 per cent. solution. In comparison with the pharmacopeial maximal doses of cocaine and novocaine, albromine is found in practice to be 25 times less poisonous than cocaine and 2.5 times less than novocaine. The practicability of using albromine in general surgery is exemplified by a survey of the different operations that it has been used for and by a limited number of clinical accounts of operated cases, and definite acknowledgment is made of its usefulness, in so far as it satisfies the need of a reliable anesthetic, harmless, and of sufficiently lasting effect—this while emphasizing the fact that several investigations remain to be concluded before final scientific judgment can be given regarding the new agent.

Spinal Anesthesia in Abdominal Surgery.—Carl H. Bastron (*Northwest Medicine,* May, 1926) asserts that with nontoxic drugs and a faultless technic spinal anesthesia is practically devoid of danger, and is a practical procedure in all operations below the diaphragm. Failures are almost always due to faulty technic. It is not contraindicated in pulmonary tuberculosis, heart disease, and low blood pressure. Preoperative stimulation is of little value in prevention of blood pressure drop. The symptoms of collapse after spinal anesthesia are not due to the lowered blood pressure, but to the suddenness of this lowering.

GYNECOLOGY AND OBSTETRICS

The Bell Bettner Operation.—W. B. Bell (*Surgery, Gynecology and Obstetrics,* 42:1) presents his operative technic, for ovarian conservation or grafting, revised as follows:

1. As in dealing with any case of salpingitis, it is important for the surgeon, after separating adhesions to omentum and bowel, if these be present, to free completely the adherent tubes and ovaries and also the uterus if it be bound down in a position of retroversion.

2. The infundibulo pelvic and round ligaments are ligated together on both sides, if the ovaries are to be removed, and an additional ligature is tied round each infundibulopelvic ligament as a measure of safety.

3. If one ovary can be retained in position, the mesosalpinx of the same side is divided as close to the affected tube as possible. Vessels are caught in forceps and ligated subsequently. A ligature placed around the ovarian and round ligaments includes the terminal anastomotic branches of the uterine artery on this side.

4. After the ligation of vessels mentioned, according to the intention of the surgeon, to leave an ovary in situ or not, a transverse flap of peritoneum of the uterovesical pouch

is raised, and the uterine arteries on either side are ligated at a level about one half or three quarters of an inch above the internal os uteri.

The entire blood supply of the parts concerned is thus arrested, and the operation should be almost bloodless.

5. The ovaries and tubes are cut free on either side—unless the tube on one side has already been detached leaving an ovary in position—up to the lateral aspects of the uterus above the ligatures placed on the uterine arteries.

6. A transverse wedgeshaped portion of the fundus is now excised by means of anterior and posterior incisions.

7. The V shaped raw area left in the uterus, with the lower part of the uterine cavity showing in the angle, is closed by means of the mattress and over suture, which the author employs so frequently in operations involving suture of the uterus and of the vaginal walls, and which is best effected with a Reverdin needle. The mattress stitches, when tied, bring into apposition the deeper parts of the uterine wound, and the "over stitches," made with the long ends of the threads left after the mattress stitches have been tied, close effectively the edges.

8. The pedicles on either side, in which are contained the round and infundibulopelvic ligaments, or on one side the round ovarian ligaments, are fixed by means of a suture fairly high on the back of the utriculus. By this means the small uterus is kept forward, an important consideration if there be raw surfaces in the pouch of Douglas, where adhesions have been separated.

9. The flap of peritoneum which was raised from the uterovesical pouch is now brought over the utriculus, and sutured to the posterior wall. In this way the line of suture at the summit of the small uterus is completely covered. In a like fashion with lateral sutures the attachment of the pedicles to the posterior surface of the uterus are covered smoothly with peritoneum.

This last detail of technic is most important, for intestinal adhesions to the line of suture in the uterus would be most difficult to prevent if a covering of peritoneum were not used.

Anterior Abdominal Hysterotomy.—P. Oginz (*Surgery, Gynecology and Obstetrics,* 42:4) asserts that the operation of hysterotomy for the interruption of pregnancy and sterilization is of great value in certain cases of pulmonary tuberculosis, cardiac diseases, chronic nephritis and hypertension, and some unusual cases; and could be used to the patient's advantage much more often than has been the practice in this country. The technic which the author advocates follows:

A midabdominal incision is made from an inch or two below the umbilicus to the symphysis. The uterus is seized by a tenaculum, brought out of the abdomen, and then well walled off by lap sponges. A four or five centimetre incision is made in the midline beginning at the fundus and extending toward the cervix through all the uterine coats. The membranes usually bulge through the incision and are ruptured. The embryo and placenta are detached and removed with a gauze wrapped finger or a sponge stick forceps introduced into the cavity of the uterus. Here a little difficulty is encountered because the spongy layer of the decidua is not fully developed and does not separate easily. There is little bleeding from the placental sinuses. The delivery of the membranes and the placenta is followed by an injection of one cubic centimetre of pituitrin directly into the uterine musculature. This contracts the uterus fairly well. A continuous suture of No. 2 plain catgut brings the musculature of the uterus together, but does not take in the endometrium. A second seromuscular layer of continuous No. 2 plain gut followed by a peritonealization of the raw surface, closes the uterus firmly, preventing any possible leakage. The tube is now grasped by an artery clamp at its isthmic portion and picked up, so that a knuckle is formed. A fine needle carrying silk is passed under the tube at the apex of the knuckle and tied first over one limb and then over the other. The apex of the knuckle is cut off with the scissors and both raw surfaces are cauterized by thermocautery or carbolic and alcohol. The same is repeated on the other tube. A rapid inspection is then made and the abdomen is closed. The operation is followed by as little postoperative inconvenience as that following an interval appendectomy. In the author's series of cases little pain was experienced and the temperature never rose to over 100.5° F. The patients were returned to the care of the medical men on the tenth or twelfth day after the operation. During convalescence, very moderate vaginal bleeding due to the throwing off of small placental rests is a common finding. Not a single one of my cases showed any morbidity.

The operation can be done at any time during the pregnancy. In the early months a two inch abdominal incision, just large enough to admit two fingers, may be adequate for the entire operation.

Cæsarean Section at Cook County Hospital.—In a series of one hundred and sixty-six cases H. F. Lewis (*Surgery, Gynecology and Obstetrics,* 42:6) reports a death rate of seven per cent. Of the various types of operation employed, the classical operation of Saenger was the one most frequently used. Eighty-seven such operations are included in the one hundred and fifty-eight cases belonging to this series. Six patients were operated upon by the Porro method. One vaginal Cæsarean section was done. The low cervical operation of Kroenig was done by two of us. These operations numbered forty-eight. One operator employed the low incision through the abdominal wall with the longitudinal incision through the lower segment and cervix; the other made a transverse opening through the cervical muscles, usually with the fingers. The former method Lewis termed the low cervical and the latter the transverse cervical. There have been thirty-five low cervical and thirteen transverse Cæsarean sections.

Another type of operation has been done by two operators at the hospital for a few years. This I will call the longitudinal fundal Cæsarean, of which there were sixteen cases. The incision, long enough to allow dislocation of the uterus, is made in the abdominal wall in the median line about half above and half below the navel. After the uterus has been everted the abdominal wound is temporarily held together by means of one or two vulsella and the base of the uterus is lightly packed with gauze. Thus the spill is well controlled and we rarely have any fluids leaking into the belly. The uterine incision is made longitudinally in the median line of the fundus of the uterus, large enough to permit delivery of the baby and extending equally fore and aft. By tilting the uterus the spill can be directed away from the wound. One advantage is that the uterine wound is as far as possible away from the usual source of infection, which is almost always via the genital canal. It is the ideal method for the case of placenta previa in which the Cæsarean operation may sometimes be indicated.

Rupture of the Uterus.—J. G. Sherrill (*Surgery, Gynecology and Obstetrics,* 42:5) says that among the many causes of this complication the use of pituitrin is of considerable importance. Its use early in labor may be followed by rupture. Sudden collapse during the progress or at the completion of labor is of great diagnostic value in cases of rupture and should at once suggest its occurrence. Uncontrollable hemorrhage after the delivery of the child and placenta should cause one to suspect rupture of the uterus, either partial or complete. Inspection of the source of the hemorrhage should clear up the diagnosis.

The important causes of death are hemorrhage, shock, and sepsis. Many of these deaths are undoubtedly the result of illadvised or protracted efforts at delivery before the condition is recognized. It is evident that prompt recognition and surgical intervention will show marked decrease in the mortality.

The treatment of these cases at operation consists in suture of the torn uterus or in hysterectomy. When there is any doubt regarding the presence of infection, removal of the uterus is preferable. In the absence of infection, suture of the rent as in Cæsarean section may be employed. It does not appear in the light of advanced surgical technic that the employment of tamponade would be wise except in those cases in which competent surgical help cannot be obtained.

Sedimentation Test.—H. L. Frosch (*American Journal of Surgery,* 40:5) finds that a sedimentation time of more than two hours is of no diagnostic value. An increasing sedimentation time means that the patient is improving. A diminishing sedimentation time means that the patient is getting worse. The prognosis is poor in any case having a persistent sedimentation time of less than one half hour. Any surgical case having a sedimentation time of less than one half hour requires an immediate operation. This test is of no aid in the diagnosis of pregnancy. In gynecological pelvic conditions it is an aid both in differential diagnosis and also as in determining the time of operation.

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GREGORY STRAGNELL, M. D., *Editor*

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Medicolegal Notes.

STATUTE APPORTIONING COST OF COUNTY TUBERCULOSIS HOSPITAL HELD CONSTITUTIONAL

Massachusetts St. 1924, c. 443, provides that all the cities and towns of Essex County, including those previously exempted by St. 1916, c. 286, should constitute the Essex County tuberculosis district and be subject to all the provisions of the general law as to care of persons suffering from tuberculosis. The cost of maintenance, operation and repair of the county tuberculosis hospital is to be assessed upon all the cities and towns of the county in accordance with their valuations. In Essex County v. City of Newburyport, 150 N. E. 234, the constitutionality of the statute was challenged so far it required the city to pay a part of the cost of the county hospital. The Massachusetts Supreme Judicial Court holds that the statute contained nothing arbitrary, despotic, or constituting a flagrant misuse of legislative power such as would render it unconstitutional; and it authorized no taking of property without due process of law contrary to the Fourteenth Amendment.

VERIFICATION OF SKIAGRAPHS INTRODUCED IN EVIDENCE

In a proceeding under the Illinois Workmen's Compensation Act, the claim being that the claimant strained a kidney and the muscles of his back while lifting a pit car on a mine track, skiagraphs were used as the basis of the testimony of some of the witnesses who testified as to the extent of the claimant's disability. The Illinois Supreme Court held, Madison Coal Corp. v. Industrial Commission, 150 N. E. 724, that a proper foundation was not laid for the use of the skiagraphs, and that the testimony based thereon was inadmissible, under the rules laid down for the use of such testimony in Stevens v. Illinois Central R. Co., 306 Ill., 370, as follows: "Although a skiagraph produced by x rays cannot be verified as a true representation of the subject in the same way as a picture made by a camera, the rule in regard to the use of ordinary photographs on the trial of a cause applies to skiagraphs of the internal structure and condition of the human body taken by the aid of x rays, and such a skiagraph, when verified by proof that it is a true representation, is admissible in evidence. Like other photographs, they cannot be received as evidence until proper proof of their correctness and accuracy is produced. It must be established by competent evidence that the picture correctly portrays the condition it purports to represent before it has any place in the case. Some witness must be able to testify that the picture offered in evidence shows accurately what the witness saw when he looked into the body with the fluoroscope, or he must be able to say that he is skilled in the use of the X ray machine and in taking and developing x ray pictures, and that he took the picture offered in evidence with the body in a certain position (describing it), with a machine which he knew to be in good working condition and accurate, and that from his experience he was able to say that the picture produced by the machine was an accurate picture of the internal condition of the body. These methods of establishing the accuracy of the picture are not exclusive, but whatever method is used its accuracy must be established before it is admitted."

It was also held error to permit the medical witnesses to detail complaints of the patient and his manifestations of pain which were within his control, and then express an opinion as to the patient's condition based thereon.

MISREPRESENTATIONS AS TO HEALTH IN APPLICATION FOR INSURANCE POLICY

Where the evidence in an action on an insurance policy showed that the insured, at the time of his application for the policy was suffering from cancer and within twelve months prior to the application had undergone a surgical operation for its removal, and that the disease was a contributing cause of his death a few months after the issuance of the policy, the Alabama Supreme Court held, Miller v. Metropolitan Life Ins. Co., 106 So. 335, that a representation in the application that his health was good was necessarily false and material to the risk, and no recovery could be had on the policy.

Where an application for fraternal insurance warranted answers, whether written by the applicant or not, a false warranty that he had not had certain diseases (tuberculosis, appendicitis, paralysis and spitting of blood) and had not within five years been attended by any other physician than was stated in the application, was not waived because the insurer's physician made out the application; it not appearing that the physician was advised as to the true facts or that the insured did not fully understand the answers as written. Sovereign Camp, W. O. W. v. Prince (Miss.) 106 So. 521.

REFUSAL TO SUBMIT TO OPERATION HELD WARRANTED

Where the expert witnesses in a Workmen's Compensation case were equally divided as to the nature and cause of the claimant's cataract and whether an operation would be successful, the Alabama Supreme Court held, Gulf States Steel Co. v. Cross, 106 So. 870, that the court properly declined to suspend compensation for refusal to submit to an operation.

TUBERCULOSIS RESULTING FROM INJURY HELD COMPENSABLE

The Texas Court of Civil Appeals holds, Aetna Life Ins. Co. v. Graham, 279 S. W. 923, that if the fumes incident to the mixture of chemicals in making shoe polish, inhaled by a worker, produced and kept the membranes of her nose, throat and lungs in an irritated condition, this was an injury to the physical structure of her body; and if, on account of or by reason of said irritated condition, tubercular germs seized upon said injured parts and developed into tuberculosis, that disease "naturally resulted from said injury" and was compensable under the Texas Workmen's Compensation Law. It was not necessary, under the Texas statute, that the injury should have resulted from an accident, or whether the injury and its resultant disease developed suddenly, or gradually and imperceptibly.

BURDEN OF PROOF OF LICENSE ON PHYSICIAN

The Alabama Supreme Court holds, Cummings v. State, 106 So. 852, that the treatment of human diseases is Alabama is a profession, and this profession cannot be lawfully practiced by a person in the state without a proper license or certificate of qualification. In quo warrants proceedings by the state to exclude the defendant from practising the profession of treating human diseases without a license, it was undisputed that the defendant was in the profession of a chiropractor and held that he was prohibited by statute from practicing unless he had authority by certificate or license to do so. It was held that proof of these acts by the state made a prima facie case against the defendant, and cast on him the burden of showing authority by proper certificate or license to practice that profession, as the proof of these facts was peculiarly within his knowledge.

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Mental and Physical Rest in Pulmonary Tuberculosis*

S. ADOLPHUS KNOPF, M.D.
New York

Of all the remedies employed to effect a cure in pulmonary tuberculosis, whether they were symptomatic or thought to be specific, none has gained for itself a lasting reputation. Tuberculin, the nearest approach to a specific, even when employed with the utmost care, has proved useless and even dangerous unless the rest is also given. General rest for the body, local rest for the invaded organ, freedom from anxiety of the mind, a cheerful and restful spirit, combined with rational hygienic and dietetic measures are today the universally accepted therapeutic measures for pulmonary tuberculosis. By their employment, thousands have been saved; by their neglect, an equally large or larger number of valuable lives have been lost, many in the very prime of life. The object of this paper is then to study what we can do to add to this sovereign remedy of rest, and make it most efficient.

We will first discuss the case of the ambulant patient who comes to our office for the first time. In the very act of greeting him we should make him feel that we are so interested in his case that we prefer to have a special time when we can examine him more thoroughly than during office hours when there are a number of patients to be seen. It will rather please the patient to have this manifestation of interest in his case and he will certainly feel better mentally than if obliged to wait in a crowded reception room with coughing patients who may not always bear in mind the danger of droplet infection.

The patient is received at the time set for the examination, but is allowed to rest a few moments in the well ventilated and well lighted reception room where he may have some pleasant pictures to look at on the wall and some fresh literature to glance over, instead of being obliged to handle soiled and tattered magazines.

The potential pulmonary invalid is called in from the reception room by the physician himself or by a pleasant voiced nurse whose manner should inspire confidence. While the anamnesis is being taken and inquiry being made to elicit as much as possible of the personal and family history, the observing physician will try to learn all he can of the mental attitude of the patient. It goes without saying that the physician must be free from all preconceived opinions and not belong to that class of medical men, alas not entirely extinct, who look upon the pulmonary individual, as psychically abnormal. I regret that even in a recent otherwise excellent textbook (1) we may read the following statement: "A psychic trait of the consumptive which has been noted by most writers is selfishness. He becomes egotistical and egocentric, he is interested in the welfare of but one person—himself—to the exclusion of all who have depended on him before. He will eat costly food while his children starve; he will make unreasonable demands on his relatives and friends and show no gratitude. In sanatoria this has been the most important problem with which the officers have to cope, and the failure of many superintendents is due to their lack of appreciation of this trait of the consumptive."

Dr. George H. Crofton (2) speaks of the mental phase of pulmonary tuberculosis and concludes by saying: "In general, the mental reactions of the phthisical patient may be said to indicate a reversion to childishness. . . . The patient has a tendency to react in a primitive, instinctive manner, acting upon impulse, driven by his unbridled emotions, at the mercy of his own undisciplined will." An article by B. J. Weigel, of the Albuquerque Sanatorium, New Mexico, states that among two hundred tuberculous patients he had studied carefully, ninety-four were suffering from a definite psychoneurosis or psychosis.

I hope that none of my readers will share this opinion concerning the average tuberculous patient, especially when we think of the great men in my own profession who, though tuberculous, have been more altruistic, more selfsacrificing, and of finer intellect, and who have made greater contributions to medical science than many of us in the prime of health and vigor. I need only mention such names as the immortal Trudeau, the valiant surgeon soldier, Colonel Bushnell, the genial Herbert M. King, of the Loomis Sanatorium, to represent this country. Then we think of Laennec and Grancher of France, Brehmer and Dettweiler of Germany, Buddington of England, Saugman and Finsen of Denmark, and many authorities on tuberculosis in other countries, not to mention the still active eminent American phthisiotherapeutists, well known to all of us (4).

Some years ago, when official and private phthisio-

*Read by invitation before the Philadelphia County Medical Society, May 12, 1926, and in French before the IXe *Congrès de l'Association des Médecins de Langue Française de l'Amérique du Nord*, Montreal, September 22, 1926.

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phobia was rampant, I wrote an article under the title of "A Plea for Justice to the Consumptive" (5), for which I collected the opinions of many men on the subject of the mentality and alleged egotism of the average tuberculous individual. In a charming letter I received from Dr. Trudeau, he wrote: "I have seen certainly more patience, courage, selfdenial, and unselfish devotion to others in consumptives than I have noticed in the majority of healthy human beings. Indeed the sanatorium work never could have been carried on were it not for the selfsacrificing devotion to the suffering of others shown by my associates, the nurses, and even the employees at the sanatorium, most of them having come here originally because suffering from tuberculous disease. History is full of instances which prove that tuberculosis does not interfere with the development of the highest degree of the intellectual, the moral, or the ethical sides of man's nature."

That keenest of medical observers, the late Sir William Osler, said: "My impression is that the unfortunate victims of tuberculosis are above the average in their mental and moral character."

With this thought in mind, let the physician approach his patient with the questions that will give him all the facts he desires to have in order to form a background for the patient's case. Even before asking any questions, the physician may have observed an increasing pulse rate because of mental agitation. A few calming and encouraging words, assuring the patient that tuberculosis is not at all a hopeless disease, will help to quiet him. At times, a patient may come for examination who has already been diagnosed as a suspicious case by another physician and has been sent, or come on his own initiative, for confirmation of the diagnosis. In either case he may present a veritable fear complex. He fears to lose the doubt about his being tuberculous; he is thoroughly apprehensive that as the result of a definite diagnosis there will be ostracism, isolation, separation from his family, ultimate suffering and early demise. Sometimes to all this is added the fear of losing his position if he is an employee and in moderate circumstances. Step by step such a patient must be convinced of the groundlessness of his fears. The curability of the disease must be dwelt upon and the marvelous reduction of the disease by our modern methods of cure pointed out to him. He may be told of the endless number of men and women who have accomplished great things in life while still afflicted with and after having been cured of tuberculosis. Such were Honore de Balzac, the great French novelist; Elizabeth Browning, the noted English poetess; Lord George Byron, the celebrated English poet; the famous Polish composer and pianist Chopin; our own Ralph Waldo Emerson; the great German poet Goethe; the celebrated German lyric poet and critic Heinrich Heine; the great American historian and novelist Washington Irving; Samuel Johnson, the celebrated English lexicographer and essayist; the German philosopher Immanuel Kant; John B. P. Molière, the greatest French writer of comedies; the celebrated Italian painter Raphael; the German poet Schiller; Spinoza, the philosopher; the well known author Robert Louis Stevenson; the celebrated American writer Henry D. Thoreau, the famous French philosopher and writer Voltaire, etc. When the physician asks about the probable hereditary tendency, let him embrace the opportunity to assure the patient that, even if his father or mother may have died of the disease, this by no means signifies that he too is doomed, for we do not consider tuberculosis as hereditary but rather as a disease transmitted from person to person. At this state of the anamnesis a few words cautioning against infection from tuberculous sputum carelessly deposited, or through coughing without holding the hand before his mouth, may be *apropos*.

When it comes to the question whether the patient has had a hemorrhage or bloody expectoration, an excellent chance arises to quiet his fears. If he has had one and that was what brought him to be examined, he should thank his Creator for the incident, for otherwise the disease might have gone on to a far more advanced stage when the chances for a recovery might have been less good. If the patient has never had any hemoptysis, he should be prepared for the possibility of the occurrence, be told what to do, and be assured that a hemoptysis is no more serious than a cough, and that one or even several of them would by no means lessen his chances for recovery.

The patient should always be asked about the use of alcohol, drugs, or tobacco, and warned against their danger, be it a male or female patient; for nowadays we find the fairer sex at times indulging quite as excessively in cigarette smoking as men do, which, of course, is neither helpful as a preventive nor as a cure for pulmonary tuberculosis.

Occasionally, there will come to the physician who sees many cases of tuberculosis an individual with seeming psychosis or psychoneurosis which, on careful examination and analysis, will be found not to be due to tuberculous disease, but to the habit of taking some narcotic drug. The patient may have acquired this habit from the indiscriminate use of patent medicines containing habit forming drugs, from unscrupulous drug venders, or perhaps by the too frequent use of carelessly handed out prescriptions of cough mixture containing opiates. Such cases should be treated by gradual withdrawal of the drug and building up the general system, in addition to which we have the allimportant suggestion therapy. We must convince the patient of the true nature of his nervous affliction and that it is essential to have his cooperation in order to effect a cure.

The examination room of the phthisiotherapeutist, or for that matter of any physician, should of course be light and cheerful, well ventilated and also well warmed in cold weather to prevent chilling the patient in mind and body. The more thorough the examination, the more will the patient's mind be assured that he is in good hands and that what is humanly possible will be done for him. If the prognosis is favorable the patient should be told so, if doubtful or unfavorable, the patient should be assured that while the case seems somewhat serious it is certainly not hopeless.

The advice as to climatic change, if such is indicated, should be given only after having learned what the patient is financially able to do. It is obviously bad therapy to tell a poor patient or one in moderate circumstances to pack up and go to a distant climatic health resort. After having found out what the

patient can do for his own financial support and for how long, and having sized up the individual likes and dislikes for hot or cold climates, and found out whether or not a serious nostalgia would result from sending him away, the physician can easily make up his mind if the patient will be mentally and physically better off at home or away from home, in a sanatorium or hospital or in a hotel or boarding house at a health resort under medical supervision, and what climate might be best suited for him. The physician should bear in mind the maxim that where the patient is happiest and most contented and able to spend in comfort the greatest number of hours of the day and the greatest number of days of the year outdoors, and where the medical supervision and guidance is as nearly perfect as possible, is the ideal place to send him. This may be any place where the air is pure and the extremes of temperature not too pronounced.

Of course, one must never forget that there are patients who cannot be disciplined except in a sanatorium or hospital and who must be under constant medical supervision. There is one more point to be taken into consideration when selecting the climate for a patient, and that is when he expresses a desire for a particular climate, health resort or sanatorium because he had heard that there a certain patient whom he knew got well. Unless there is an absolute contraindication to his going there, it is best to yield. More mental peace and therefore perhaps an additional therapeutic factor will be gained thereby.

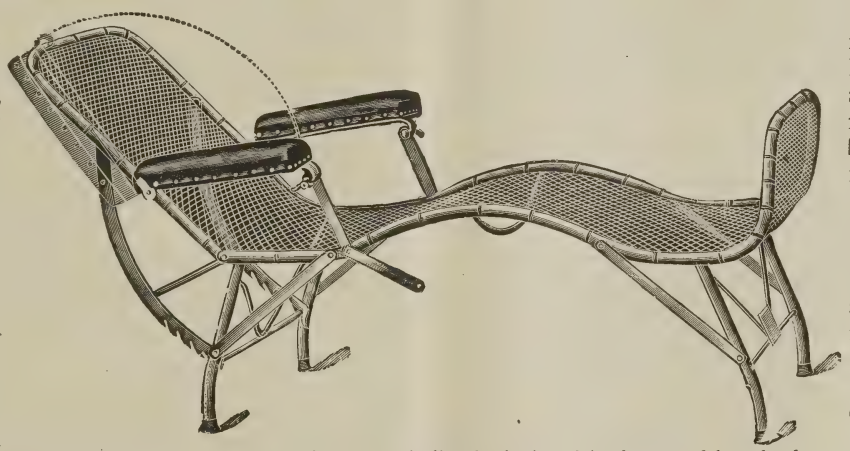

Fig. 1.—Reclining chair showing proper incline for back and head rest and knee bend to assure the least cardiac effort and facilitate complete relaxation.

In some sanatoria and health resorts the patient, whether febrile or not, is immediately put to bed on arrival for a period of from four to six weeks, followed by carefully graduated exercises; but with an afebrile patient it may be difficult to keep him always hopeful and cheerful and overcome all possible signs of nostalgia when confirmed to bed continuously and for so long a time.

Concerning the prescribing of exercise, which should of course be graded with a patient who has been at rest for so long a time, I recommend gentle massage of lower and upper extremities prior to beginning walking exercises. In determining how many minutes and how much should be the gradual increase in exercise, I find that the patient himself can be of great help by bearing in mind the following injunction: Never start to walk or do any kind of physical or mental work or exercise when tired, and always stop before getting tired. When hill climbing is the exercise, the patient should of course start with walking upward and return down hill when beginning to feel tired.

All patients should be enjoined to take as much physical and mental rest as possible, but in order to reap the benefit of rest the patient must know how to relax. Few of them know how and they must be taught how to attain complete muscular relaxation. The feverish patient should be at once put to bed and only after his temperature has subsided for a number of days in succession should he be permitted to start the rest or Liege cure on the reclining chair. The latter should be comfortable and have the right kneebend (Fig. 1). The ambulant and afebrile patient may be allowed to start his rest cure at once on the reclining chair.

Complete rest, at least one half hour before and one hour after the principal meals, should always be insisted upon, even for comparatively early cases with little or no activity. Absolute bed rest for active cases is of course the ideal treatment. The less the body moves in general and the less frequently the lung moves in particular, the better are the chances of recovery. Webb has well said (6): "Pulmonary tuberculosis is liable to relapse in many instances because rest, prolonged and as complete as possible, is not continuous. Until serial röntgen ray studies were made, it was believed that pulmonary tuberculosis deposits always became replaced by fibrous or calcified structures. We now know that in secondary lung infections of experimental animals, and also in phthisis, actual absorption of lesions does occur." In addition to this Webb also makes a statement concerning prolonged rest to which I am willing to add that one perhaps never errs in advising too long a rest cure for pulmonary tuberculosis but may regret to have advised too short a one. Here are Webb's own words concerning this: "Rest in pulmonary tuberculosis should be prolonged many months after the temperature and pulse have become normal, and sputum has disappeared. The tuberculous deposits in general start to clear away after six months of rest, but are not completely absorbed until from two to three years of rest. We must not be deceived by a drop in the patient's temperature. That is only the beginning of the fight. The patient should rest one year, or two, or sometimes even three years, but we must remember that a mind unoccupied is a mind distressed. The patient must be happy while resting."

To procure this happiness as well as physical and mental rest, it is essential that the environments should tend to make the enforced repose as pleasant as possible. When the patient's condition demands rest in bed within doors, his room should not only be well ventilated but pleasantly arranged. The bed must be comfortable, and if possible there should be two beds, one for day and one for night use. While

heavy dust catching furniture and draperies should never be in a sickroom, washable curtains, light furniture and pleasing pictures should help to make the room homelike and take away the hospital atmosphere. If the beds can be arranged on a veranda or so that the patient can look out of the window where he has a pleasant view, so much the better. It is largely for this reason that, whenever possible, the rest cure galleries in sanatoria are placed so that the patients may look upon a beautiful landscape. That the patient's rest in bed may be comfortable, he should of course have bed clothes according to the season—in winter the typical Adirondack bed—and never should he be put to bed or enter the bed in cold weather without it having been previously warmed. The bed should warm him and not he the bed. While sleeping in blankets has been recommended by many therapeutists, I do not favor it for sanitary reasons. In the Adirondack bed the sheets remain in place even with a restless patient, but if absolutely desired the blankets under or over the patient might be protected by a muslin bag.

No bed or even ambulant patient should be compelled to rise for the purpose of urinating and a urinal and chamber pot should be placed at his disposal, which he can use without uncovering himself more than the one arm to handle and to empty the urinal. Many a bronchitis has been contracted by ward patients being obliged to go to a distant toilet to urinate on cold nights when according to regulations all the windows were open for proper ventilation. Urinal and commode should always be resorted to, day and night in febrile cases, where absolute rest has been enjoined as an antipyretic measure. If there is a great deal of activity and temperature the patient should of course be put at the socalled typhoid rest. He should not be allowed to talk and should even be fed so as to avoid all possible physical exertion. Gentle sponging with tepid water may help in reducing the temperature. Coal tar products are apt to depress and are as a rule of little help, but the ingestion of large quantities of cold water will aid.

The bed patient who is only slightly feverish may receive a limited number of visitors, but only such as he really wishes to see. Those who are irritating and tiring to him should be rigidly excluded, and so should all those who are fond of relating that this, that, or another friend of theirs, who had the same trouble as he, were treated by this or that particular doctor, or in this or that particular climate.

Krause, in his charming little book (7), has well said: "It should hardly be necessary to point out the enormous amount of functional disturbances which the reactions of jarring personalities bring into being: nor are their effects on already established organic deficiency or disability any less marked. Every physician soon becomes familiar with them and is mindful to attempt to control them when treating his patients. There is a social and family environment of amiability and good fellowship and contentment and happiness; it may exist in surroundings which physically may be far from our accepted hygienic ideal: and its effect on the general well being of those happily situated in it is all good. This much is, I think, beyond dispute. But there is also a radically different environment: one of incompatibility, of oppression and brutality, and even bestiality. It is by no means the heritage or appanage of the hovel exclusively. It may dwell where air and space and light and food leave nothing to be desired; yet even here it will make for ill health."

The physical symptom which deprives the patient of the greatest amount of rest is of course the cough. While bed rest is an invaluable remedy, it is not always sufficient to control either the useless or the useful cough. The useless cough being merely due to an irritation in the larynx or a nervous habit, can be treated by psychotherapy, by telling the patient that he must try to suppress it by will power and that he is only allowed to cough when he feels that he must expectorate. A dietetic help to combat the tenacious sputum is the ingestion of plenty of table salt with the patient's meals. In urging to discipline his cough we must not fail to tell him never, under false modesty, to swallow his expectoration, as an infection of the intestinal tract may result. Little sips of water, a sudden inhalation, controlled diaphragmatic respiration—to which we will return later on—are also physical means to stop useless cough which is not only annoying to the patient himself, but also to those near him. My great teacher, Dettweiler, one of the pioneers of the sanatorium treatment, was in the habit of telling his patients that coughing in public merely on account of a tickling in the throat was as impolite as scratching the head in public because it itched. I have found that a more impressive warning is to tell the patient that useless coughing—that is to say, any dry cough—irritates the throat, and when the habit becomes chronic there is danger of laryngeal complication. If laryngeal complication does set in, or if there is fear of it, the ideal remedy is of course absolute rest of the vocal cords, and I always quote to my patients the case of Sir St. Clair Thomson, of London, who cured himself of a serious pulmonary and laryngeal tuberculosis by a year of absolute silence. That the useless cough can be completely controlled through psychotherapy has been amply demonstrated in sanatoria, where patients are taught to master the habit of useless coughing, and hardly ever cough at the table. Compared with any other place where the same number of people congregate, there is often less coughing in a well conducted sanatorium for tuberculous invalids.

Of course, there are some rebellious coughs which must be treated by medication. Cough mixtures with opiates may even become necessary; the same is true in some cases of excruciating pain in the chest which can only be relieved by narcotics. Since the continued use of these drugs may lead to addiction, it is a wise practice for a physician, in prescribing the cough mixture or directly administering codeine, morphine, veronal, or similar products, to diminish the dose gradually, omit the drug occasionally, and finally leave it out of the cough mixture entirely, or replace the morphine, codeine, or veronal tablets by tablets made of substances of a more innocent character. For example, a cough mixture made of syrup of wild cherry or of Virginia prunes, with syrup of tolu, will taste just the same whether or not it contains the narcotic. Such little deceptions may sometimes be necessary in private as well as in hospital and sanatorium practice. Purely nervous anorexia may also be combated in a similar way by giving an innocent tonic.

The dietetic directions for a bed patient must of course be given to the nurse, and to the ambulant case they should preferably be given in writing. In his anxiety to gain weight the patient must be guarded against stuffing which is not productive of either physical or mental rest.

To assure rest of body, mind, and soul, the patient should be asked directly if he has any mental anxiety, and if it is within the power of the physician to remove it, he should endeavor to do so. If he worries on account of financial matters, the relatives should be informed of it so that steps for relief may be taken. The patient who worries will not eat well, and his recovery will be inevitably retarded thereby. Worry and anxiety are among the greatest obstacles to the successful treatment of tuberculosis, particularly among the poor, when the patient is the breadwinner of the family. Doomed to temporary inactivity, as otherwise he cannot be restored to health, he usually broods over his fate and worries about how those who are dependent upon him will get along. As already suggested, wherever the relatives are in a position to relieve the patient of financial worry, they should strive to do so, but when the relatives themselves are poor, of course no relief can be expected from them. The wonderful results obtained by Dr. Pratt, of Boston, were doubtless due to the fact that with the aid of funds placed at his disposal by the Emmanuel Church, he was enabled not only to take the very best of care of a large number of his tuberculous poor by installing the sanatorium treatment in their own homes, but he could investigate the financial resources of all the patients under his care, and when there was want, the good men and women of the church supplied food, clothing, and other necessities of life for the family so that the patient could feel absolutely sure that those who were dependent upon him were amply provided for. To appreciate this phase of psychology in the treatment of the consumptive, one must have observed the psychological change in a patient who was suddenly relieved from anxiety concerning his loved ones by the assurance that all was well at home and that there was no suffering or want. It is not to be wondered at that the results obtained by Dr. Pratt equalled, and in some instances surpassed, the best results obtained in sanatoria for the consumptive poor located in almost ideal climatic regions. Here is a field where public and private philanthropy can do immeasurable good.

We have already referred to how to prepare the patient's mind for a possible hemoptysis. Mental and physical quiet is of course all essential during the period of bleeding of the lung, and during an active hemoptysis an injection of morphine is certainly the ideal remedy—the "G. O. M." (God's Own Medicine) as the great Osler used to call it.

Artificial pneumothorax is of course the ideal remedy if it can be determined whether the hemorrhage comes from the right or left lung, and if pleuritic adhesions do not prevent entrance into the intrapleural space. If this is impossible, of course ligation of the extremities becomes necessary. The sight of a great deal of blood always alarms the patient and often those who observe it. In ward service the bed of a patient with a serious hemorrhage should be surrounded by a screen so that his fellow patients may not observe the bleeding.

In the course of the disease the patient may at times have a chill. This should of course be treated like any other chill by hot drinks and external warm applications, unless it is of a malarial character. Here, however, I wish to say that in all our aerotherapeutic measures we should try to avoid chilling the patient, and I am thoroughly opposed to treating the advanced case in the open air on cold days. If the environment is so cold that the patient feels chilly, uncomfortable, and unhappy, the cold aerotherapy will probably do him more harm than good.

We have above defended the average tuberculous patient against the accusation of being a psychoneurotic. Nevertheless that sometimes in the moderately or far advanced stages, where the symptoms are painful, the mind may be influenced thereby is selfevident, but this is by no means characteristic of tuberculosis but common to all serious diseases.

Whether the pain is real or not, the physician should listen sympathetically to the complaint of the patient even if inwardly convinced that the trouble is imaginary or greatly exaggerated in the patient's recital. Nothing is gained by disputing the patient's claim that he suffers, but he may be told that the trouble is probably of a nervous origin and will pass away as soon as he is quiet. The sympathy of his medical adviser will have a beneficial psychological effect.

If the patient is actually suffering, he should, of course, be given relief by medicinal agents. If, in the opinion of the physician, the pain is only imaginary, some innocent mixture may be given, and if in addition the patient's mind can be diverted to other things by rest breathing, autosuggestion, or prayer, it will surely be a benefit to the sufferer.

The reading of good but not exciting books to the patient or by the patient himself will help to pass the time pleasantly and lead the invalid's thoughts away from his disease. When the patient is of a religious nature, the cooperation of the minister of his church is often most helpful to overcome despondency and restore a hopeful outlook to the discouraged sufferer.

Nervous and digestive disturbances, or excess of sexual excitation, must of course be attended to by hygienic, dietetic, and sometimes medicinal means, for if neglected they are apt to interfere materially with the physical as well as the mental rest of the pulmonary invalid. However, I hope I may once for all disabuse the minds of the lay as well as some of the medical world who hold the tubercle bacillus responsible for making the consumptive more sexually active than he was prior to the development of the disease. The fact of the matter is that the enforced idleness of the tuberculous patient and the foolish administration of large quantities of eggs are responsible for finding once in a while a distinct venery in a tuberculous sufferer. To divert the mind into other channels and encourage selfcontrol are the remedies for this occasional phenomenon. Good, sweet and soothing music, performed by the artist in person before the patient, or by graphophone or radio, will always be a good adjuvant in the treatment of the nervous, depressed or discouraged tuberculous patient, as it is a good remedy for almost any kind of patient.

(To be continued)

The Secundines in Relation to Fetal Pathology

H. D. FAIR, M. D.
Muncie, Ind.

In this paper the term secundines is used in its literal interpretation. The word is derived from the Latin *secundus,* meaning, to follow: therefore in my usage it will include all the uterine contents which naturally follow the fetus when it makes its egress from the mother's womb. These consist of four items, viz., amniotic fluid, umbilical cord, placenta, and membranous sac.

The conclusions I have drawn are based largely on my own experience, consequently, with the exception of a few undisputed statistical facts, no socalled authority can be held accountable for any assertions which I may make.

AMNIOTIC FLUID

The amniotic fluid, so essential to the development of a perfect fetus, is not stable either in composition, color, density or amount, ranging in specific gravity from 1,010 to 1,070; in color from pale amber to deep bronze, and in opaqueness from slight flocculence to a dense meconium or bilelike consistency. Where the amniotic fluid comes from has been a subject of controversy for hundreds of years. While it contains some of the matter found in normal urine it is not likely that much of it comes from the fetal kidneys.

DeLee says that there is usually less fluid in the amniotic sac at the completion of term than there was at the seventh month of gestation. Now, if it were true that the fetus urinated it would undoubtedly pass a greater quantity during the ninth month than during any previous thirty days, and DeLee's dictum would not hold good.

It has been demonstrated, by the presence of lanugo, epidermic cells, etc., in the fetal stomach, that it swallows a portion of its amniotic surroundings. If this is true it is hardly likely that nature would design or intend a fetus to swallow its own excretion which is largely toxic.

I have examined several specimens of normal color and low specific gravity and found the composition to resemble that of normal perspiration from the adult—even to taste. The following substances have been found in normal amniotic fluids: albumin, calcium carbonate, calcium phosphate, diastase ferment, epithelial cells, leucocytes, meconium, pepsin, potassium bicarbonate, potassium sulphate, sebaceous matter, sodium carbonate, sodium chloride, sodium phosphate, sugar and other elements. The normal amniotic fluid holds many of the constituents of blood serum which are probably secreted by the mother in some way. In the *American Text Book of Obstetrics* I find this assertion, "Hydramnios may be due to oversecretion, imperfect absorption or to a combination of these." But we are left in the dark as to just what organs or tissues furnish the secretion or which perform the absorption.

Sometimes the fluid decomposes. While this condition is usually coincident with death and putrefaction of the fetus, it is not always so.

I believe that a fetus may urinate, but when it does, that the act is merely incidental or accidental. It is possible that under certain conditions it may swallow a gulp of amniotic fluid, but this contains no essential nourishment and the ingestion was unintended. If amniotic fluid does get into the fetal stomach it seems more likely that it trickled down the esophagus instead of being swallowed.

It is possible that if the circulation rate of the mother be increased or if she have a temporary elevation of temperature, the sweat glands of the fetus may become active, and perspiration from its body mingles with the fluid, yet I believe also that the bulk of the fluid is secreted by or through the amnion itself. I will have more to say regarding this point later.

The quantity of amniotic fluid has varied, in my experience, from an imperceptible amount up to approximately four gallons. I have collected and measured the quantity on several occasions where a quantity above normal was suspected, and in every instance where there was more than three quarts of fluid there was also some pathology to be found in the fetus.

In the instance above mentioned where the quantity was four gallons the fetus had a marked exophthalmus, and the thyroid gland was greatly enlarged. During the final expulsive effort he inspirated some of the fluid and strangled. Probably it was well that he did so.

Hydrocephalus, spina bifida, anencephalus, ascites and syphilitic edema are the usual accompaniments of hydramnios, for which either the fetus or the mother must be responsible. Hydramnios is a real factor in uterine inertia. The uterus may become so distended that the muscles have completely lost their tone. The treatment is obvious. The other extreme known as oligohydramnios, although less frequent, is just as serious a condition as an excess, and may be responsible for club feet or hands, wry neck, spinal curvature, ankylosis of joints and even abrasions of the skin on prominent parts such as the shoulders or trochanters, with possible adhesions to the amnion.

UMBILICAL CORD

Variations in the umbilical cord are decidedly interesting to one who is observant of details. Occasionally a specimen is really marvelous. The shortest cord I ever saw had a length of nine inches and the longest fifty-five inches. Some are frail in structure and small in caliber, and contain no twists. Others are tortuous and irregular in outline, massive in size, containing superfluous and often unequally distributed amounts of Wharton's jelly. Some are unsightly, some are beautiful. One of the most remarkable of these was perfect in anatomical content and relationship. Torsions ran the whole length (twenty-two inches) and were as regular and similar, one to the other, as the coils of a steel shaving coming from the tool of a machinist's lathe.

It is said that there may be no cord at all, the placenta being attached to the fetal umbilicus. I never

saw such a one. I have never encountered one so actually short as to interfere with delivery, although I frequently contended with problems due to a relative shortening that made the task difficult.

Coils of cord around the fetal neck are common and seldom of serious consequence, but they may involve an extremity or part, constricting and interfering with development to the extent that permanent deformity or uselessness results.

Other abnormalities which are encountered are rupture of a varix (hematoma), cysts, apparently resulting from liquefaction of the jelly, faulty insertion at the placenta, or knotting sufficient to cut off the blood supply, thereby causing the death of the fetus. I have one specimen showing one double and three single knots tightly drawn. It is probably unnecessary to add that the fetus attached to this cord met a premature death and birth.

On one occasion a woman miscarried when she was between the fourth and fifth months of gestation. Inspection showed that the fetus had been dead several days; death evidently due to constriction caused by three complete coils of cord which encircled the neck.

THE PLACENTA

It is remarkable how much information an obstetrician may miss if he presumes that all placentæ are very much alike and neglects to give each a careful scrutiny, for in nearly every instance where a fetus with normal parentage shows some lack in nutrition or function there will be found an abnormality of the placenta.

In the large majority of normal cases the weight of the placenta will approximate one sixth that of the fetus. The most common cause of or association with overweight is syphilis, which can be recognized frequently in the placenta when there is no immediate manifestation in the fetus. This is such a common and well known condition that I pass it without further comment.

The most frequent pathological condition encountered in the general run of placentæ is the presence of infarcts. These may be of the white or red type, and are either meagre or profuse in number, minute or of large size, of much or of little importance.

In October of this year a woman, pregnant for the second time, placed herself under my care. She was somewhat despondent, for three years ago she had a premature labor at about the eighth month. She reported that perceptible fetal movements had ceased about two days before labor had begun, and that the fetus survived only a few hours following delivery.

At the time she consulted me she was advanced seven and one half months, and complained that the fetal movements were becoming weaker each day for the past week. Both she and her husband were above medium stature and appeared to be in excellent health. Bodily functions were more nearly normal in this patient than is usual in pregnant women. She was of the type whom we would expect to bring forth infants weighing eight or nine pounds. A careful examination failed to bring to light anything out of the ordinary, either historical or clinical, so I prescribed a supply of Schuessler's calcium phosphate, following which the fetus became more active, and the patient's mood more optimistic.

She went on to the estimated date of confinement, and dilatation was complete relatively early in labor, but the fetal head maintained its position midway in the cavity of the pelvis in spite of good pains and a left occipitoanterior presentation. After a reasonable wait in which no progress was made I applied forceps and delivered a scrawny six pound baby, showing a considerable degree of malnutrition. The cord was small, friable and stringy. Wharton's jelly appeared only in faint traces. One cotyledon near the centre of the placenta had undergone entire infarction. On a lateral periphery many small infarcts appeared. At a chance guess I would say that not more than one half of the placental surface was functioning.

Hemorrhage into the placenta is sometimes produced by congestion of the uteroplacental vessels, due to disturbances in the mother's vascular system. The extravasation may be intraplacental, into the uterine sinuses or more frequently into the decidua serotina, giving rise to the condition sometimes designated as placental apoplexy. Placental hematomata are encountered fresh, or the coagulated blood may be found in various stages of disintegration. The stagnant blood usually experiences the retrogressive metamorphoses, or may undergo cystic, fatty or calcareous degeneration. The pressure upon the villi produced by the hematoma always impairs the nutrition of the fetus.

I have observed at least a fifty per cent. increase in placental hematoma with partial separation of an anteriorly situated placenta since the popularity of osteopathy has become established. You may take this averment for what it is worth, draw your own conclusion and make your own application.

On the whole, the clinical importance of placental anomalies, in so far as form and arrangement are concerned, is not great. A wide variation is possible without pathological results. In case of accessory tissue, however, portions may be retained in the uterus giving rise to post partum hemorrhage, subinvolution or sapremia.

When the form and arrangement of the placental cotyledons vary from normal we often find a unique insertion of the cord whose vein and arteries may be bare and exposed for one or more inches. Levret has pointed out that in marginal insertion of the cord the attachment was always to the edge nearest the os uteri. Barnes verified this.

THE FETAL ENVELOPE

Twenty-eight years ago I prepared, and the *Clinic* published, a case report entitled A Double Amniotic Sac. The report caused more controversy and discussion than anything else that I have ever written. In addition to personal letters received from here and there, several columns of the *Clinic* were devoted to comments sent in by various readers. One writer contended that I did not have a double amniotic sac—that the first fluid lost by my patient was chorionic and that the second only was amniotic. I have since decided that he was correct, for on several occasions I have found a material separation of the two membranes over various areas, and the resultant space filled with fluid.

Once when inducing labor at the thirty-eighth week, because of a contracted pelvis in an elderly

primipara, I punctured a membrane, and after the escape of a few ounces of fluid, felt another sac come down and take its place over the dilated os. This also was punctured and the scalp presented. It appeared that these membranes had been separated one half or three fourths of an inch.

Our anatomists tell us that, early in embryonic life, the amnion expands until its outer surface comes in contact with the inner layer of the chorion, and this relation continues throughout gestation; more or less fusion occurring between the opposing surfaces.

Now, if it be difficult to determine the source of the fluid formed within the amniotic sac it would appear more perplexing to solve the problem of the origin of the fluid between the amnion and the chorion. The fact that it *is* there first led me to conclude that the amnion has a secretory power and function. Perhaps the constant friction between the outer and inner layers which occurs with the rhythmic contractions of the normal gravid uterus may stimulate the secretion of a fluid on the same principle that a serum laden blister may come on the palm of a novice following the vigorous use of a pick or shovel.

Referring back to Dr. DeLee's assertion—he does not tell us why there is less fluid in the sac at the seventh than at the ninth month of gestation. May I venture an explanation?

In embryonic and early fetal life the chorion is vascular. As development progresses this vascularity becomes less and less until at the seventh month of gestation about the only source of blood supply is at or near the placental margin. After the seventh month of gestation nourishment must be accomplished either by continuity of structure or by fluid contact as in certain parts of the eye.

Early in gestation, because of ample vascularity, this fluid between the chorion and amnion is abundant and after it performs its nutritive function finds its way into the cavity of the amniotic sac. Later, because of the lack of general vascularity, the fluid secreted becomes so meagre that there is no surplus left after the membranes get the nourishment necessary for their continued existence in a functionable form.

You may consider this theory far fetched but I believe it worthy of consideration.

Some ten years ago I became curious to know why the amniotic sac would rupture spontaneously at or near the expected time of labor, but before labor pains had begun. In other words, why would the first premonition of impending labor be a sudden gush of fluid? In one particular instance the woman was reclining at midafternoon on a comfortable couch.

I propounded this question to four noted obstetricians with whom I had a slight acquaintance. A replied by saying that the phenomenon usually occurred when the presentation was faulty, transverse or breech predominating. B said it was due to continued pressure on a particular area after the position of the fetus became fixed. C thought that the membranes might become adherent and unable to "give" when the stress of expansion was exerted, therefore tore as a result. Dr. Paul Titus, of Pittsburgh, believed that early rupture was because of innate imperfection in the membrane itself.

In reviewing these replies briefly, it stands to reason that that premature rupture occurring *after* one or more really vigorous pain would point to a malpresentation or position, but I could not accept A's answer as correct.

B's explanation was not satisfactory either. I thought there should not be "continuous pressure" of any consequence before a woman was conscious of contractions of the uterus. C's answer would undoubtedly hold good in a small percentage of cases, but, of course, not all.

The opinion of Dr. Titus seemed to be the most reasonable, so I began to observe more closely as opportunity presented and I now believe his theory to be applicable in the greater number of cases for both the amnion and chorion are likely to undergo several changes in consistency during the progress of gestation.

We have already referred to adhesions involving the fetus in oligohydramnios. The adherent amnion may thicken and form a band or bands that become sufficiently strong to exercise a constriction that will sever an arm or leg.

Just why the infant who emerges with part of his envelope still covering his face (born with a "veil," as the laity put it) is supposed to be lucky and have prophetic ability, I do not know. The fact that he is alive may prove his luck, for the pocket of membrane covering his head may contain enough fluid to strangle him should he make an attempt to inspire.

There are instances on record where the entire contents of the uterus have been expelled in a mass with the sac intact. I had one interesting experience. A colored woman, mother of four children, was at the eighth month of gestation. She came to me because she felt that something was not right, and I decided that she was carrying a dead fetus. Sure enough, three days after I saw her she went into labor. There was no distinction between the second and third stages, for the entire uterine contents were expelled in the unruptured sac which contained about two quarts of decomposed fluid. The fetus (five pounds) was macerated, yet the sac lacked none of its original toughness. I have never seen this happen with a live baby at full term.

You will observe that I have not mentioned placenta previa; nor have I referred to the various molar pregnancies. The former condition was ignored because a normal placenta may have many abnormal implantations without being responsible for fetal pathology. In the latter condition, while molar degeneration is due, in most instances, to anomalies of the chorion, proliferation of the syncytium, it usually occurs so early in gestation that, if the process continues for any length of time, all traces of the embryo or fetus disappear; consequently that which has no existence has no pathology. Once in a while the symptoms develop late in pregnancy and, where only part of the chorion is involved a living infant may be born, but such a result is so rare that it is good practice to empty the uterus so soon as a diagnosis of hydatidiform mole is made.

We may naturally inquire, what can we do, when confronted by an abnormality of the amnion, to make the prognosis for the fetus more favorable? In the presence of hydramnios we may be able to make a diagnosis of syphilis, anemia, heart or kid-

ney disease, and if so, treat it the best we can. The benefit accruing to the fetus is questionable because we cannot always be certain how long the fetal pathology has existed, if present, nor how much damage has already been done.

Hydramnious may, instead of a causative factor, be a sequence of monstrous conception. It is safe to say that they are frequently concomitant. In three cases of oligohydramnios, recognized between the sixth and eighth month of gestation, where no pathology was found, I got good results from the use of zanthoxylum (prickly ash), two doses a day up to a short time before delivery. Increase of fluid lessens the probability of fetal deformities.

I want to urge once more—get your patients under your observation and care early in their term of gestation.

Disease of the placenta may be responsible for improper nourishment and development, and at times the death of the fetus. If the fetus survives, the increased resistance encountered by the placental circulation may have produced disease of the heart or of some other viscera. There are no known methods whereby placental disease or anomalies, other than placenta previa, may be recognized *in utero*.

132 West Jackson Street.

Irradiation of Diseased Tonsils

J. COLEMAN SCAL, M.D.

New York

In 1924 (1), and again something over a year ago (2) I published reports of work accomplished in the application of radium to pathological conditions of tonsils, which were, for various reasons, not amenable to surgical removal. While tonsillectomy still remains the method of choice in all cases where it can be satisfactorily and safely performed, there are many conditions where it is ruled out. In cardiac, pancreatic or kidney disease, for example, or hemophilia, any operative procedure is out of the question, and we also frequently encounter patients in whom advanced age or general weakness makes it unwise to subject them to the shock of operation, even when it is so slight as that induced by a skilfully performed tonsillectomy. Then again, there is that not to be ignored minority who positively refuse operation—usually because of fear. To the large group made up from the classes just enumerated radium application offers a satisfactory alternative, and one the results of my work fully indicate is bound to become of constantly increasing importance as the technic of radium application is improved and perfected.

In my first series of seven cases radium applications were made by means of needles. A ten milligram radium needle was inserted into each tonsil and allowed to remain there for three hours, the treatment being repeated five times thereafter at intervals of two to three weeks. The effect of this treatment was decidedly beneficial, but the insertion of the needles caused considerable pain and gagging to all the patients, and in not a few instances was followed by a general systemic reaction lasting for several days.

In the second series, which brought the whole number of cases up to thirty-two, the implantation of bare tubes of radium emanation was the method employed. Following this the results were much more satisfactory than by the needle method. Not only did we obtain complete radiation of the affected lymphoid tissue (in some of the needled cases the lower poles did not receive any radiation at all), but the implantation produced neither pain nor gagging, and the resulting reaction was trifling. The serious drawbacks to this procedure were the unavoidable production of necrosis about each unscreened tube, which, though small, was yet enough to produce the reactions noted, and the fact that the tubes could not be recovered, but remained in the tissue as foreign bodies. The results, however, were so uniformly good as to leave no doubt that in the implantation of radium emanation we have found a highly efficient method of dealing with inoperable disease of the tonsils.

I am now able to report a series of twelve additional cases treated with radium by still another method—the implantation of removable platinum-radon seeds. This technic was recently perfected by Dr. Joseph Muir, who conceived the idea of screening the seed and making it possible to remove it after it had done its work, as well as designed instruments nicely adapted for placing the seeds, and withdrawing them when the desired period of radiation is completed. This method has many advantages over anything which has heretofore been put forward. Instead of a number of radioactive centres—three needles, or three or four unscreened seeds to each tonsil—a single removable seed is all that is necessary on either side, the platinum screenage permitting the radium content of each tube to be great enough to provide radiation sufficient to affect all the tissue equally, while at the same time it absolutely prevents necrosis.

The technic of implantation is so simple that it can be done by the laryngologist unassisted, although of course, if trained aid is to be had, it is highly desirable, especially in the presence of submerged tonsils, as such must be brought into view by being drawn out with a suitable forceps before the implantation it attempted.

TECHNIC

The Muir radon seed implanter is shown in Fig. 1. The trocar is needle pointed, this point being so fine as to cause but little trauma to the tissues. The trocar D is passed through the lumen of the implanter, and the removable platinum radon seed E is placed in the loading slot at G. The sliding spring C is then advanced until it holds the seed in place, pressed down upon the shaft of the trocar. The centre of the mass of tonsillar tissue having been ascertained, the opera-

tor inserts the point of the trocar exerting pressure with the index finger as shown in Fig. 2. The point enters to a depth of one centimetre, being stopped at this point by the shoulder of the implanter, as indicated at J. As soon as the tissue is pierced the trocar is withdrawn, as shown in Fig. 3, whereupon the seed

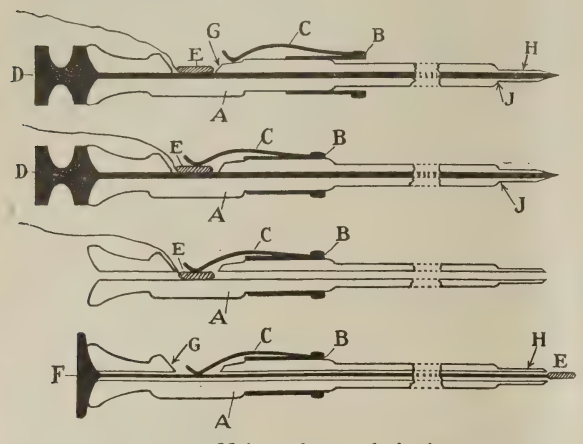

Fig. 1.—Muir radon seed implanter.

drops into the vacant lumen of the implanter, and on insertion of the obturator F, is pushed down the channel until it is deposited in the tissues of the tonsil as shown in Fig. 4. The obturator is then withdrawn together with the instrument itself, leaving the seed implanted at a distance of one centimetre from the point of entry, with the attached thread—previously cut off to a length of two centimetres—pro-

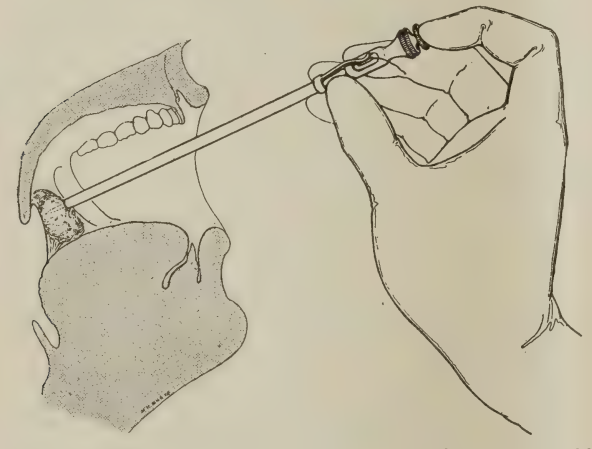

Fig. 2.—Point of trocar inserted, operator exerting pressure with index finger.

truding from the point of entry. This one centimetre length of thread hanging down over the surface of the tonsil does not cause the patient the slightest inconvenience, nor does it interfere in any way with function.

The seeds are permitted to remain in position for a period of four days. At the expiration of this period they are pulled out by means of an ordinary forceps which readily grasps the length of thread left protruding from the point of entry. As the pain of insertion and removal is practically *nil,* at no time is any anesthetic required, and there is, of course, no hospitalization, nor disability of any kind.

THE EMPLOYMENT OF PLATINUM RADON SEEDS

Case I.—S. P., female, aged forty-five years (referred by Dr. A. L. Ringer). For the past six years sore throat and joint pains, which kept her indoors, sometimes for long periods. Under Dr. Ringer's treatment on account of diabetes, for the past year. On examination her tonsils were inflamed and hypertrophied, and crypts were in evidence from which seropus could be pressed out. Patient so weak assistance in walking was necessary.

Removable platinum radon seeds containing approximately 2.82 millicures of radium emanation were implanted one on each side. Seeds removed at the end of four days by means of attached thread. No reaction and patient much improved at next examina-

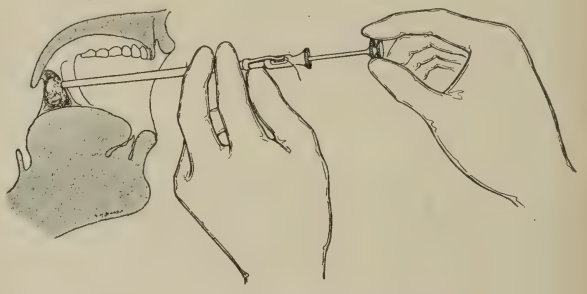

Fig. 3.—Showing trocar withdrawn.

tion. In three weeks could get about unassisted, and although the joint symptoms have not entirely disappeared, the sore throat has been eliminated, and the general condition is greatly benefited. The tonsils have gradually atrophied leaving only fibrous tissue. The patient is still under observation.

Case II.—M. G., male, aged fifty-four years. For the past six years frequent attacks of sore throat with increasing deafness; also complaint of fleeting pains in the joints. Tonsils moderately enlarged and diseased, showing follicles which contained pus. Beginning otosclerosis on both sides, with diminished hearing. In each tonsil a 2.8 millicurie platinum radon seed was implanted and withdrawn on the fourth day. There was no reaction of any sort, the tonsils gradually atrophying. There have been no more attacks

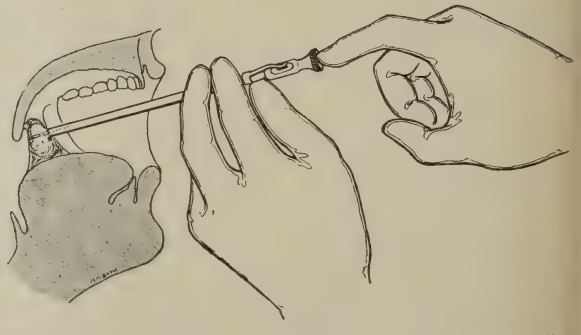

Fig. 4.—Showing radon seeds deposited in tissues of tonsil.

or tonsillitis and the joint pains are seldom experienced. No improvement in hearing.

Case III.—J. H., male, printer by trade, aged fifty-two years (referred by the Medical Department of the Workman's Circle). History of repeated at-

tacks of tonsillitis which confined him to bed for several days at a time. Operation refused because of fear. Examination showed the tonsils to be so hypertrophied as to meet in the centre of the pharynx, causing the patient to talk "as though he had a hot potato in his mouth." A 2.81 mc. platinum radon seed was placed on each side in the usual manner and taken out on the fifth day. There was absolutely no reaction and gradual atrophy of the tonsils took place until only fibrous tissue now remains. No further attacks of tonsillitis.

Case IV.—R. P., female, aged fifty-three. She had typhoid fever as a child, and was operated six years ago for removal of appendix and fallopian tubes. For twelve years past there has been almost continuous sore throat, associated with rheumatic pains. Examination shows that though only moderately enlarged, the tonsils are greatly diseased, for the pillars are red and adherent and pus could be expressed from the left tonsil upon pressure. There was also a myocarditis present. The treatment consisted in the implantation of a removable platinum radon seed into each tonsil; content 2.66 mc. These seeds were withdrawn after four days with no reaction at any time. Four weeks later the patient returned saying her throat was no longer sore, pain in extremities had ceased and she felt better generally. The tonsils had at this time atrophied considerably, and the large pus containing crypt originally visible on the left side has gradually closed up and disappeared.

Case V.—I. C., a rabbi, aged sixty. The complaint was sore throat, especially noticeable after singing. Examination revealed diseased tonsils, very much enlarged, from which cheesy material could be expressed. There were no joint symptoms. Two removable platinum radon seeds were implanted and kept in position for four days. This procedure induced no reaction, and there has been no further complaint of sore throat. The tonsils atrophied so greatly that at the end of a month they had decreased in size at least fifty per cent. This patient is still under observation.

Case VI.—T. P., female, aged sixty; referred for tonsillectomy for the relief of joint symptoms. She gave a history of sore throat so severe as to prevent her from performing her household duties. Examination showed the tonsils to be submerged and very red and diseased. Seropus could be expressed on both sides. A platinum radon seed in each tonsil, placed in the usual way, and initially containing 2.62 mc. of radium emanation, produced no reaction, and was removed at the end of the four day period. Two months afterward the patient was practically without joint symptoms, while the size of the tonsils was appreciably diminished. At the end of four months the tonsils could be made out only after the anterior pillars were retracted. This patient also is being kept under observation.

Case VII.—J. C., male, aged thirty-seven, gave a history of repeated attacks of tonsillitis; his tonsils were submerged and cryptic. A 2.5 millicurie seed was placed on either side and removed at the end of four days. Within two weeks there was a noticeable regression of both lymphoid masses, and within six months the inflammation was a thing of the past. The tonsils are now entirely atrophied.

Case VIII.—K. S., female, a professional singer, aged twenty-three. She had suffered severe and prolonged attacks of tonsillitis for a number of years, these illnesses seriously interfering with her professional activities. A 2.5 millicurie platinum radon seed was implanted in each tonsil and withdrawn at the end of the four day period. There have been no more attacks of tonsillitis, and at the end of two months the tonsils had almost entirely disappeared. When seven months had passed only fibrous tissue could be seen and this was only just visible.

Case IX.—J. S., male, aged fifty. This man gave a history of numerous disabling attacks of tonsillitis, and of arthritic symptoms. Tonsils pedunculated, and so hypertrophied as to meet at the median line. The dose consisted of a 2.8 platinum radon seed on either side, withdrawn after four days. A noticeable disappearance of the tonsils commenced within four weeks, and after a lapse of six months there has been no return of any of the symptoms.

Case X.—J. B. T., male, aged forty-seven. This patient was a hemophiliac, giving a history of excessive bleeding upon the slightest trauma. His tonsils were submerged and cryptic, and he had often been advised to have tonsillectomy done, but had been restrained by fear of hemorrhage. A dose of 2.5 millicuries on each side for the four day period brought about complete regression of the tonsillar masses within a few months.

Case XI.—C. W., physician's wife, aged thirty-three. She had suffered repeated attacks of tonsillitis, and on examination the tonsils were found to be pedunculated and largely converted into masses of fibrous tissue, the result of repeated inflammations. Though tonsils of this type are more difficult to effect by radiation, the placing of a 2.5 millicurie seed in each mass sufficed to cause their complete disappearance. Since the implantation this patient has been entirely well.

Case XII.—J. R., female, aged forty-five. This woman had an exophthalmic goitre and presented the typical Graves's syndrome. The tonsils were pedunculated and much hypertrophied. A 2.8 millicurie seed was implanted in each tonsil and removed from the mass at the end of four days. This was eventually followed, not only by complete regression of the tonsils, but also by a marked reduction in all the varied manifestations characteristic of the Graves's syndrome. The goitre was later radiated by a similar technic, with marked success.

CONCLUSIONS

In the implantation of removable platinum radon seeds we at present have an adequate substitute for tonsillectomy in those cases where surgery is, for any reason, contraindicated.

1. The amount of radiation can be measured with accuracy and the applicators located with such exactness as to insure equal and complete distribution throughout the tissues.

2. Only one treatment is necessary, a fact much appreciated by the patient.

3. The platinum filtration eliminates all danger of necrosis with subsequent sloughing of the tissue, systemic reactions of any kind never occurring.

4. The attached thread, making the seed easily removable when its period of usefulness is completed,

does away with the objectionable foreign body remaining permanently in the tissues—a drawback of the bare tube method.

5. There is no hospitalization, nor disability of any kind. No anesthetic is necessary, yet there is no pain, nor suffering of any description. The complete absence of shock is a great advantage in those cases classed as inoperable.

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44 West Seventy-fourth Street.

The Use of Vaccines and Sera in Communicable Diseases*

RALPH OAKLEY CLOCK, M.D., F.A.C.P.

Pearl River, New York

(*Concluded from page* 598)

TYPHOID FEVER

Typhoid vaccination is particularly indicated for the many thousands who annually leave their homes for travel or life in the country where the sources of water, milk and food supplies are apt to be uncertain; for campers, lumbermen, civil engineers' forces, and industrial concerns that employ a large number of people; and for nurses, house staffs and administration staffs of hospitals.

Vaccination against typhoid fever is now a procedure of established worth, for there is no question of its power to prevent infection. The duration of immunity is difficult to establish, but it seems to be at least two years. Much depends on the amount of exposure. The protection is not absolute; but while some cases do occur among the vaccinated, the number is small.

Kinds of vaccine.—Originally, vaccination against typhoid fever was carried out with a vaccine prepared only from the Rawlings culture of the typhoid bacillus. To protect against the unusual exposure to typhoid infections due to mobilization of an army and navy for warfare, a combined vaccine prepared from the typhoid bacillus and from paratyphoid A and B bacilli was adopted by the medical departments of the United States Army and Navy during the World War; and such a triple or combined vaccine has been quite universally employed in civilian practice.

However, experience has shown that exposure to paratyphoid infection is infrequently encountered, except in the Southern States; and that the triple vaccine gives more frequent and more severe reactions than does the plain typhoid vaccine. Apparently, the paratyphoid bacilli develop toxic substances in the vaccine more provocative of severe reactions than the typhoid bacillus; for fewer severe reactions follow the use of a straight typhoid vaccine.

Accordingly, in January, 1925, the Medical Department of the United States Navy (12) adopted plain typhoid vaccine which represents essentially a reversion to the vaccine used prior to the War. A few months previously, the Surgeon General's Office of the War Department ordered a reduction in the strength of the triple vaccine made at the Army Medical School.

Reactions avoidable.—In view of these facts, the plain typhoid vaccine is now being recommended for general civilian use. However, it should be pointed out that reactions are largely avoidable; because there is nothing, except a matter of convenience, which prohibits giving a greater number of smaller doses instead of the total amount of vaccine in three doses. In fact, there is distinct evidence that the standard amount given in more and smaller doses would give greater immunity. This is indicated by the results obtained by immunizing laboratory animals. The use, therefore, of the standard amount of typhoid vaccines administered in five doses at intervals of about five days favors the development of a greater degree of immunity and, at the same time, tends to minimize or even eliminate reactions.

WHOOPING COUGH

As a cause of death in children, whooping cough ranks fourth among the acute communicable diseases. However, if we could go behind mortality statistics and ascertain how many of the deaths attributed to pneumonia were a sequence to whooping cough, we would then realize that this disease constitutes a much more serious peril to children than is commonly known and recognized even by physicians.

The teaching that vaccines offer nothing of value is unfortunate, for it is not entirely correct. Such teaching discourages the laity from seeking medical assistance, and the result is that whooping cough patients run at large to a degree that constitutes a serious menace to the children of the community. In the vast majority of cases, because of the absence of fever and also because there is no such disability as febrile diseases generally produce, parents allow their child to roam about and to mingle with others. In this, unfortunately, they are sometimes encouraged by physicians. Moreover, many parents do not call in a physician when the presence of whooping cough in their child becomes evident. The disease may be either unusually mild or lack the telltale whoop or vomiting. This type of case is often overlooked by the physician, and such masked cases may prove more potent in spreading infection than the typical and severe cases.

*Lecture delivered at the New England Health Institute in Concord, N. H., held September 27 to October 1, 1926, under the auspices of the United States Public Health Service, the New England State Health Departments, the Yale and Harvard Schools of Public Health, and the Departments of Public Health and Biology of the Massachusetts Institute of Technology and Simmons College.

Value of vaccines.—Bacterial vaccines for the prevention and treatment of whooping cough have been in more or less general use for the past fifteen years. From the very first, the published reports have stated that pertussis vaccine is a helpful therapeutic measure; the authors being of the opinion that the vaccine treatment lessens the severity of paroxysms and diminishes the vomiting, and some think it to have high prophylactic value. Many physicians of excellent judgment and long clinical experience find pertussis vaccine effective as a therapeutic agent in a considerable number of cases, especially the severe ones, if used early enough and in sufficiently large doses.

The majority of reports in recent years, especially from the United States, England, Italy, Japan and Denmark, confirm the statement that vaccines made from Bordet bacilli have a beneficial effect on whooping cough. For example, Miller, (14) formerly director of the Division of Communicable Diseases, Health Department of Akron, Ohio, summarizes as follows:

> Experience seems to show that sufficiently large doses of Bordet bacilli establish a positive immunity against whooping cough and check the spread of the disease in the public schools. Whooping cough vaccine is the only therapeutic measure worthy of consideration in the treatment of the disease. Failures are due entirely to insufficient, timid dosage at too long intervals. I believe that public health authorities are justified in promoting immunization against whooping cough just as they are urging immunization against typhoid fever.

Fresh vaccine.—Several writers have emphasized the necessity for using freshly prepared pertussis vaccine, and have pointed out that the clinical results are more definite when fresh vaccines are used. Thus, Huenekens (15) reports that pertussis vaccine from two to three months old, employed in large doses, immunizes in only twelve and a half per cent. of cases; while freshly prepared vaccine employed in the same dose produces evidence of immunity in ninety-four per cent. of cases. Again, Bloom advises the use of fresh vaccine: not exceeding one month old, and preferably not more than ten days old.

Deterioration.—Obviously, freshly prepared vaccines are not always obtainable. By the time they reach the physician, vaccines prepared by suspending the bacteria in physiological salt solution often consist chiefly of nonspecific products of autolysis: in other words, selfdigestion is brought about by the enzymes within the bacterial cell with consequent loss of the specific immunizing properties. Furthermore, since the usual method of killing the bacteria by heat must alter certain protein constituents of the bacterial cell, it is evident that saline vaccines cannot represent the full immunizing properties of the bacteria. Hence, the failure of such vaccines to uniformly produce an efficient immunity.

Glycerol vaccine.—Pertussis glycerol vaccine, however, insures the equivalent of a freshly prepared vaccine at all times. The use of glycerol as a preservative is not new. It has been successfully used to prevent deterioration in several biological products. By suspending the mass of Bordet bacilli in 66 2-3 per cent. glycerol, deterioration of the bacterial protein with its specific immunizing properties is prevented for a long period, (16). And since the vaccine is not heated, there are no protein changes due to partial heat coagulation. Therefore, when the physician cannot be assured of a freshly prepared vaccine, the use of pertussis glycerol vaccine is to be recommended. Such a vaccine possesses many advantages substantiated by physicians of repute who use it regularly and obtain clinical results which are uniformly satisfactory.

Administration.—Infants and young children tolerate the vaccine injections exceptionally well and, as a rule, the younger the child, the less probability of reaction. In fact, newborn babies tolerate without any ill effects the maximum immunizing dose which is used for older children. The vaccine should be injected subcutaneously into the buttocks or into the anterior abdominal wall in infants and young children; while the arm over the insertion of the deltoid muscle may be used in older children.

Dose.—For prophylaxis, three doses of the vaccine are given at intervals of three days; the first dose containing two billion and the second and third each four billion Bordet bacilli. For the treatment of whooping cough, an initial dose of one billion is followed by two billion, four billion, six billion, eight billion, etc.; the injections being given every other day as a rule, or daily if the case is severe.

Results.—Clinical reports show that when the vaccine is administered to children after exposure to whooping cough, it may be considered as probably from 85 to 90 per cent. efficient. In those who do contract whooping cough after vaccination, the disease is very mild. The effect of the vaccine in the treatment of the disease is shown by, 1, a diminution in the number and severity of the paroxysms; 2, lessened vomiting; 3, marked shortening in duration of the disease; and 4, absence of bronchopneumonia as a complication.

SERUM REACTIONS

No discussion of the use of sera in the treatment of disease would be complete without some reference to serum reactions and methods for their control and prevention. The injection of serum or antitoxin may be followed by reactions of three types which, however, bear no relation whatever to the therapeutic properties of the serum, but are due to the protein contained in the serum.

1. *Serum sickness.*—In approximately sixty per cent. of cases there develops a skin eruption, edema, enlargement of the lymph nodes, pain in the joints and rise in temperature. Most commonly, such symptoms appear from eight to twelve days after the serum injections. While it lasts, the condition is very annoying but not dangerous, and complete recovery has always followed symptomatic treatment.

2. *Thermal reaction.*—Either immediately or within an hour there may be a chill and a rise of temperature lasting about two hours. This type of reaction occurs in about forty per cent. of cases.

3. *Anaphylactoid reactions.*—About one in every twenty thousand primary injections of serum is followed very quickly by more or less alarming symptoms, comprising rapid and feeble pulse, nausea and a feeling of suffocation. Such symptoms are particularly apt to occur in those persons who suffer from asthma or hay fever. These symptoms are best treated by prompt hypodermic injection of one c.c. (sixteen minims) of epinephrine hydrochloride (1:1,000 solution) and 1/100 to 1/50 grain of atropinesulphate. A second injection of epinephrine hy-

drochloride may be given if the symptoms do not rapidly improve.

Second injections.—A few deaths from serum injections have been recorded: about one for every seventy thousand persons injected. These deaths, however, have occurred chiefly and perhaps wholely in cases of status lymphaticus and have resulted from the first injection of serum. The fear of repeating a serum injection because of having sensitized the patient is practically groundless, for there need be no fear in giving a second intramuscular or subcutaneous injection to any person who has not suffered severely from the first injection. The only difference in the effects from the two injections will be that the serum reaction will follow almost immediately after the second injection (accelerated reaction). If the second injection is given intravenously after a considerable lapse of time, it should be given even more slowly than the first. If it is necessary to give serum to asthmatic persons, it is well to give it in fractional doses: 0.1 c.c. every fifteen minutes will usually be tolerated without disagreeable effects.

Skin test.—The skin test, which has long been advocated for determining hypersensitiveness to serum, has proved to be unreliable; for tests carried out in the Willard Parker Hospital in New York City have shown no correlation between skin tests and serum reactions. In fact, in approximately ninety-four per cent. of patients who gave a positive skin test a systemic reaction did not develop when serum or antitoxin was injected.

Eye test.—Recent evidence, however, indicates that the eye test (17), is apparenty a more reliable criterion of the probability of serum reactions. This test, therefore, may be used for determining the presence of hypersensitiveness to horse serum. For this purpose a 1:10 dilution of serum or antitoxin is instilled into the conjunctival sac. If a severe conjunctival reaction occurs, it indicates that a serum reaction may be expected if any amount of serum or antitoxin is injected. (The conjunctival reaction may be neutralized by the instillation of epinephrine hydrochloride solution). This eye test is now recommended as the most reliable method of testing for hypersensitiveness to horse serum or antitoxic globulin.

Prevention of reactions.—For practical purposes, the preliminary eye test may be limited to those patients whose history of asthma or hay fever indicates that they will develop severe serum reactions. With such a history and evidences of hypersensitiveness as revealed by the eye test, the fractional administration of serum, starting with very small doses, may be successful in inducing some tolerance. For this purpose, doses of 0.1 c.c. may be given subcutaneously and increased every fifteen minutes or as rapidly as reactions permit.

SUMMARY

1. In the development of vaccines and sera, laboratory research and clinical observation should go hand in hand, each acting as a control on the other.

2. The universal application of toxin-antitoxin for immunizing all children of preschool and school ages would soon result in community protection from diphtheria.

3. Antimeningococcic serum should be injected by gravity into the spinal canal between the third and fourth lumbar vertebræ or into the lateral ventricles through the open fontanelle, so that it will come directly in contact with the meningococci.

4. While waiting for confirmation of the probable discoveries of Tunnicliff and Ferry, serum from convalescent measles patients must be depended upon for the prevention of measles. Doses of six to ten c.c. are usually sufficient to prevent the development of the disease in children who have been exposed less than five days to measles.

5. Prophylactic vaccination against pneumonia is particularly indicated for persons who are very susceptible to pneumonia and who suffer from repeated attacks of the disease, and for large groups of persons who are living together under abnormal conditions, such as recruits in time of war. Pneumococcus vaccine could probably also be used with benefit in the case of industrial workers who are constantly exposed to cold and wet.

All cases of Type I pneumococcus pneumonia should be treated as early as possible with Type I antipneumococcic serum, administered intravenously in doses of 100 c.c. and repeated every eight hours until symptoms indicate that the infection has been overcome.

The researches of Felton at Harvard University give promise of eventually placing the serum treatment of pneumonia on a more practical and efficient basis. His refined and concentrated solutions of the antibodies in antipneumococcic sera are now being subjected to clinical trials in several large cities.

6. The suspected rabid animal ought to be confined and kept under observation for one week, because, if the animal is in the incubation stage at the time of the biting, it will show symptoms of rabies and die within that period. However, the safest procedure is to begin antirabic treatment at once, without waiting for a positive diagnosis to be made from the animal.

The Semple method of rabies vaccine consists of a killed virus and possesses many advantages over other methods. It has largely superseded the older Pasteur method of treatment.

7. Persons susceptible to scarlet fever sometimes give a negative Dick test. This may be due to weak binding power of the toxin with the tissue cells or to sudden deterioration of the toxin.

The best dose of scarlet fever toxin for immunization has not yet been definitely established.

The rash in scarlet fever indicates the necessity for antitoxin treatment, while the extent of sepsis is the guide to the amount of antitoxin needed. The smallest or basic therapeutic dose should be an amount that will neutralize 600,000 standard skin test doses of toxin. Treatment should cause within twelve to eighteen hours, a marked subjective improvement, critical fall of temperature and pulse, and fading of the rash.

8. During 1925, the United States reported more smallpox than any other country except India. The many advantages of the puncture method of vaccination should appeal alike to the health officer, school physician and general practitioner.

9. The experience gained during the World War emphasized the immense value of antitoxin in the prevention of tetanus, and demonstrated the importance of freely cutting away all dead tissue within

and about extensively lacerated and contused wounds.

Extensive experience has proved that the intraspinal method of administering tetanus antitoxin should be given preference over all other methods. The dose recommended comprises five thousand to ten thousand units intraspinally and ten thousand units intravenously on the first day; five thousand to ten thousand units intraspinally on the second day; five thousand units intraspinally on the third day; and five thousand to ten thousand units subcutaneously on the fourth day.

10. Typhoid triple vaccine gives more frequent and more severe reactions than does the plain typhoid vaccine. Therefore, the plain typhoid vaccine is now recommended for general use. By giving the standard amount of vaccine in a greater number of small doses, reactions may be avoided.

11. The majority of reports in recent years confirm the statement that freshly prepared vaccines made from Bordet bacilli have a beneficial effect on whooping cough. Pertussis glycerol vaccine insures the equivalent of a freshly prepared vaccine at all times.

Reports indicate that the vaccine is probably from eighty-five to ninety per cent. efficient as a prophylactic; and when used in the treatment of whooping cough it diminishes the paroxysms, lessens the vomiting, shortens the duration of the disease and tends to prevent bronchopneumonia.

12. Severe serum reactions occur almost wholly after primary injections of serum. The fear of repeating a serum injection because of having sensitized the patient is practically groundless, for there need be no fear of giving a second intramuscular or subcutaneous injection to any person who has not suffered severely from the first injection.

The eye test is now recommended as the most reliable method of testing for hypersensitiveness to horse serum; but for practical purposes this test may be limited to those patients whose history of asthma or hay fever indicates that severe serum reactions will develop. With such a history and evidences of hypersensitiveness as revealed by the eye test, fractional administration of serum in doses of 0.1 c.c. subcutaneously and increased every fifteen minutes may be successful in inducing some tolerance.

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Some Observations on the Bromsulphalein Test in the Clinical Study of Liver Functions.*

JULIUS FRIEDENWALD, M.D.
and W. W. ARMSTRONG, M.D.
Baltimore, Md.

Since the introduction of the newer tests for the study of liver function much interest has been manifested in the clinical application of these procedures. It was soon ascertained that unlike in a similar study of the kidney, an organ whose function is largely limited to excretion, that the liver activity is far more complicated inasmuch as this organ has numerous functions, some of which up to the present have not been fully ascertained. On this account any functional test designed to measure liver abnormality must necessarily be limited in its application and consequently the results obtained must be interpreted with caution. Further difficulties arise, too, in that in any disease of the liver all functions are not equally disturbed or involved and consequently no single test could possibly measure hepatic function as a whole for a disturbance of one form of activity does not necessarily indicate an equal disturbance of others. Furthermore inasmuch as bile cannot be collected unmixed from intestinal contents through the duodenal tube in a pure state a complete study of this secretion for diagnostic purposes is in consequence extremely difficult.

Studies on liver activities have likewise established the fact that this organ is possessed with a large factor of safety and consequently with the power of still functioning normally even though a large part be removed or be diseased.

On this account from the recent studies of Green, McVicar, Snell, Walters (1) and others the conclusion

*From the Gastroenterological Clinic of the Department of Medicine, University of Maryland, Baltimore.

has been reached that one cannot rely upon a single test alone, but that the combined study of several positive tests is of great value as indicating the probable presence of definite hepatic disturbance. According to these publications, the finding of positive serum bilirubin together with phenoltetrachlorphthalein tests is of especial diagnostic value in the study of patients with hepatic involvement.

Many observations have appeared since Rosenthal (2) first introduced his phenoltetrachlorphthalein test attesting to its importance as a means of determining disturbances of liver function. In a publication presented by us (3) the following conclusions as to the value of this test were drawn

1. This test is a valuable means of determining liver function for, when injected intravenously, it disappears rapidly under normal conditions at a uniform rate; while on the other hand a greater or less retention is noted corresponding to the degree of liver disturbance.

2. In catarrhal jaundice marked retention is noted, a condition which continues on for a considerable period of time following the disappearance of the icterus, which strongly suggests that we are dealing in this condition with some distinct disturbance of the liver cells.

3. In cirrhosis of the liver, retention of the dye may occur to a greater or less degree. As Rosenthal and others have pointed out due to the chronicity of the disease, the liver may undergo a reserve compensatory hyperplasia in consequence of which even with a more or less extensive lesion normal or nearly normal findings may be obtained.

4. In all instances of cancer of the liver retention occurs to a rather marked degree.

5. In syphilis of the liver retention of the dye may or may not occur depending largely upon the degree of involvement.

6. In cancer of the pancreas with secondary liver involvement marked retention is ordinarily noted.

7. In chronic cholecystitis, cholelithiasis and affections in which the liver itself is not severely involved retention is never observed. This finding may be of value in the differential diagnosis between certain affections of the liver, gallbladder and extrahepatic lesions.

8. Finally from these observations it is evident that this test as simplified by Rosenthal is of considerable value as a means of determining liver function; it should be routinely performed whenever there is evidence of liver involvement since it offers much diagnostic aid.

However, attention has been called during the past year especially by Maurer and Gatewood (4) and Rosenau (5) to the danger attendant upon the use of phenoltetrachlorphthalein when employed indiscriminately in determining liver function. Following the use of this dye in some instances thromboses, local inflammatory reactions at the seat of the injection and chills have been noted by certain observers. A few deaths due to its use have also been recorded.

Maurer and Gatewood conclude "that the ideal dye for liver function must be nontoxic; it must be a crystaloid. Its primary removal from the blood stream must be solely by the liver. It must remain in the blood a sufficient length of time for determinations to be made, and its ultimate removal from the organism must be solely by the liver patenchyma cells." Recognizing the objection to the employment if phenoltetrachlorphthalein as a test of the liver function as noted by Maurer and Gatewood, Rosenthal and White (6) have recently also called attention to a few of its disadvantages. For example, the amount of the dye necessary for a test is quite large. Five mg. per kilogram of body weight and the concentrations that it reaches in the blood never exceed thirty-five per cent. of the amount injected even in severe liver disease.

In order to overcome these difficulties, Rosenthal and White have introduced a new dye bromsulphalein (phenoltetrabromphthalein sodium sulphonate) which they consider ideal for the purpose of determining liver function.

The greater concentrations reached by the dye in the blood make it possible to employ a small dose.

The dye can be utilized according to these observers intravenously in doses of two mg. per kilogram of body weight and is nonirritating to the vein wall. It may be injected in concentrated solution without further dilution with normal salt solution.

The method of employing this test as advised by Rosenthal and White (6) is as follows:

The patient is weighed and the dosage calculated on a basis of two mg. per kilogram of body weight. The body weight of the patient in pounds divided by fifty-five will give the exact quantity in c. c. of the five per cent. solution required. It may be measured by drawing it into a sterile five c. c. syringe and then slowly injected directly into an arm vein; the injection should be sufficiently slow to occupy one minute, and care should be taken not to allow infiltration of the dye outside the vein. Thirty minutes after injection, a sample of blood (four or five c. c.) is drawn, preferably from the opposite arm, by allowing the blood to run through a needle directly into a dry test tube. In cases of early liver disease it may be advisable to obtain also a sample of blood at exactly five minutes after injection.

After the blood has coagulated it is centrifugalized, and the clear serum is pipetted into two small test tubes. To one of these is added one or two drops of a ten per cent. solution of sodium hydroxid to bring out the color of the dye, and to the other tube a drop of five per cent. hydrochloric acid to clear the serum of any hemolysis. The amount of dye present is now estimated by direct comparison with a series of standards. The tube of clear, acidified serum is placed in front of the standard in a suitable comparator box, and by simultaneously looking through both tubes a comparison can be made with the colored alkalized serum.* "

According to Rosenthal and White, under normal conditions five minutes after the injection twenty to fifty per cent. of the dye is present in the serum with an average of thirty-five per cent. and in thirty minutes the serum is free of the dye.

Following the method advised by Rosenthal and White our observations extend over a series of fifty-two patients affected with various types of digestive disturbances. Of these there were two cases of

*Permanent standards with comparator box as well as bromsulphalein in sterile ampules containing a five per cent. solution may be obtained from Messrs. Hynson, Westcott and Dunning of Baltimore.

catarrhal jaundice; five cases of cirrhosis of the liver; nine cases of cancer of the liver; one case of syphilis of the liver; five cases of cancer of the stomach; two cases of cancer of the pancreas with jaundice; eleven cases of chronic cholecystitis; seventeen cases of gastric disturbances in the form of achylia gastrica (7); and hyperchlorhydria (10).

The method employed in these cases was identical with that described by Rosenthal and White; two mg. of bromsulphalein per kilogram of body weight were injected intravenously and the blood withdrawn in five minutes and thirty minutes following the injections and the determination of the percentage of the dye remaining in the plasma estimated.

In no instances were there any indications of local inflammatory reactions, thromboses or toxic signs in the form of chills and fever.

CATARRHAL JAUNDICE

In the two cases of catarrhal jaundice studied by us, the results were similar to those obtained by Rosenthal. A considerable retention was noted in both instances, jaundice being marked. As was noted in our former publication, in this affection there is present a definite disturbance of the liver cells to such a degree that a considerable time must elapse following the disappearance of the jaundice before normal liver function is again restored.

TABLE I: CASES OF CATARRHAL JAUNDICE

No. of Cases	Name	Age	Sex	Rosenthal-White Test five minutes	Rosenthal-White Test thirty minutes
1	P. B.	26	M	54	28
2	K. T.	29	M	62	36

CIRRHOSIS OF THE LIVER

In our series there were five cases of portal cirrhosis. In all there was a certain amount of free dominal fluid present. In three of the cases the retention of the dye was marked in two there was no retention. As has already been pointed out due to the chronicity of the disease, the liver may undergo a reserve compensatory hyperplasia in consequence of which even with a more or less extensive lesion normal or nearly normal findings may be obtained. This fact will explain the slight degree of retention noted in this disease at times.

TABLE II: CASES OF CIRRHOSIS OF THE LIVER

No. of Cases	Name	Age	Sex	Rosenthal-White Test five minutes	Rosenthal-White Test thirty minutes
1	M. S.	30	M	80	50
2	S. T.	38	M	60	40
3	M. L.	56	M	20	0
4	W. F.	42	M	40	5
5	T. P.	48	M	70	18

CANCER OF THE LIVER

There were nine cases of cancer of the liver in our series. In three jaundice was present. Retention of the dye was observed to a more or less marked degree in every instance.

TABLE III: CASES OF CARCINOMA OF THE LIVER

No. of Cases	Name	Age	Sex	Rosenthal-White Test five minutes	Rosenthal-White Test thirty minutes
1	P. T.	56	M	50	20
2	K. F.	46	F	65	45
3	B. L.	59	M	58	10
4	T. S.	62	M	80	36
5	A. P.	52	F	56	5
6	C. K.	48	M	64	8
7	S. M.	55	M		
8	L. P.	56	F	66	24
9	S. B.	67	M	72	18

SYPHILIS OF THE LIVER

In the single case in which this test was applied, the disease had markedly subsided under treatment, and consequently the bromsulphalein test was found normal.

TABLE IV: CASE OF SYPHILIS OF THE LIVER

No. of Cases	Name	Age	Sex	Rosenthal-White Test five minutes	Rosenthal-White Test thirty minutes
1	R. F.	42	M	30	0

CANCER OF THE STOMACH

In the five cases of cancer of the stomach normal values were obtained in every instance. Attention must again be called to these findings as of especial interest in as much as they point to this test as a possible means of differentiating between carcinoma of the stomach when this organ is alone affected or when at the same time the liver is likewise involved.

TABLE V: CASES OF CANCER OF THE STOMACH

No. of Cases	Name	Age	Sex	Rosenthal-White Test five minutes	Rosenthal-White Test thirty minutes
1	J. S.	48	M	25	0
2	K. P.	52	F	35	0
3	L. S.	62	M	45	0
4	T. K.	59	M	32	0
5	L. T.	49	M	40	0

CANCER OF THE PANCREAS

The two cases of cancer of the pancreas in our series were markedly jaundiced and in both instances considerable retention of the dye was noted. In as much as the liver was enlarged in both instances, it was undoubtedly also involved in the disease.

TABLE VI

No. of Cases	Name	Age	Sex	Rosenthal-White Test five minutes	Rosenthal-White Test thirty minutes
1	C. F.	52	M	62	32
2	L. T.	63	M	58	24

CHRONIC CHOLECYSTITIS

There were eleven cases of chronic cholecystitis in our group. In all the Rosenthal-White test revealed normal findings.

TABLE VII: CASES OF CHRONIC CHOLECYSTITIS

No. of Cases	Name	Age	Sex	Rosenthal-White Test five minutes	Rosenthal-White Test thirty minutes
1	B. T.	56	M	15	0
2	W. K.	47	M	60	0
3	B. F.	40	M	20	0
4	T. J.	42	M	10	0
5	J. S.	43	M	10	0
6	C. K.	64	F	32	0
7	M. L.	52	M	28	0
8	S. B.	48	F	44	0
9	L. T.	55	F	38	0
10	G. P.	44	M	46	0
11	F. T.	50	M	20	0

GASTRIC DISTURBANCES OF A BENIGN TYPE

There were seventeen cases in this group; of which seven were cases of achylia gastrica and ten of hyperchlorhydria. In all the Rosenthal-White test revealed normal findings.

TABLE VIII: BENIGN GASTRIC DISTURBANCES

No. of Cases	Name	Age	Sex	Rosenthal-White Test five minutes	Rosenthal-White Test thirty minutes
1	P. T.	42	M	15	0
2	R. G.	34	M	18	0
3	T. O.	26	F	10	0
4	L. H.	28	F	12	0

Table VIII (*Continued*)—benign gastric disturbances

No. of Cases	Name	Age	Sex	Rosenthal-White Test five minutes	Rosenthal-White Test thirty minutes
5	L. K.	31	M	25	0
6	B. F.	27	M	35	0
7	K. L.	42	M	12	0
8	M. L.	36	F	10	0
9	R. F.	28	M	22	0
10	S. B.	26	M	15	0
11	J. R.	42	F	36	0
12	K. B.	38	F	21	0
13	E. T.	41	M	18	0
14	N. M.	49	F	10	0
15	H. A.	47	M	15	0
16	F. C.	36	F	18	0
17	T. P.	29	F	34	0

CONCLUSIONS

Due to certain inherent qualities of the liver itself it is now generally admitted that it is not possible to rely upon a single test alone in determining the variations in liver function, but that a combined study of several is necessary to arrive at a definite conclusion.

The Rosenthal "tetrachlor" test still continues to hold a valuable place when combined with other functional tests in determining liver function. However, due to its toxicity as noted in some instances produced by the large dosage of the dye as well as to the local reaction at the seat of injection in others, caution must be exercised in its application.

On the other hand, according to our observations, quite as reliable results may be obtained with a far less toxic dye; bromsulphalein as advised by Rosenthal and White. This dye is utilized in much smaller quantities and when administered in the proper dosage is free, according to our experience, from harmful effects. On this account the conclusion has been arrived at by us that this dye should be utilized from now on in all instances in place of phenoltetrachlorphthalein as an aid in determining hepatic function.

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The Serology of General Paresis in the Malaria Treated Cases

ARMANDO FERRARO, M.D.
and THEODORE C. C. FONG, M.D.
St. Elizabeth's Hospital, Washington, D. C.

(*Concluded from page* 610)

Mentally his stream of talk was unlimited, irrelevant and incoherent. He walked aimlessly about the wards. He possessed an exaggerated ego, had flight of ideas and unnatural habits. He wanted to purchase all vacant real estate. He had numerous other plans and schemes for investment. He entertained ideas of persecution and imagined that his relatives were responsible for his incarceration. He denied all hallucinations. His memory, insight and judgment were impaired. He was oriented in all spheres.

On July 5, 1924, this patient received the malaria treatment and had eleven paroxysms. His serology prior to the treatment was as follows:

April 18, 1922—Blood W.R. 4 plus, C.S.F. W.R. 4 plus, Globulin 2 plus, Cells 28, Gold curve 5555543210.
July 19, 1922—Blood W. R. negative, C.S.F. W.R. 4 plus, Globulin 1 plus, Cells 24, Gold curve 5544332100.
October 10, 1922—Blood W.R. 4 plus, C.S.F. W.R. 4 plus, Globulin 1 plus, Cells 10, Gold curve 5432110000.
June 6, 1923—Blood W.R. 3 plus, C.S.F. W.R. 4 plus, Globulin 3 plus, Cells 23, Gold curve 5555543211.

Following the malaria treatment, the serological findings were as follows:

April 16, 1924—Blood W.R. 4 plus. C.S.F. W.R. 4 plus. Globulin 2 plus, Cells 9, Gold curve 3444321000.
September 25, 1925—Blood W.R. negative, C.S.F. W.R. 4 plus, Globulin 1 plus, Cells 4, Gold curve 5555554200.
October 6, 1925—Blood W.R. negative, C.S.F. W.R. 4 plus, Globulin 1 plus, Cells 3, Gold curve 5433321000.
January 26, 1926—Blood W. R. negative, C.S.F. W.R. 4 plus, Globulin 2 plus, Cells 5, Gold curve 5433410000.
March 9, 1926—Blood W.R. negative C.S.F. W.R. 4 plus, Globulin 1 plus, Cells 0, Gold curve 5332100000.

Physically, the patient has gained in weight.

The patient's neurological condition at present shows: Pupils slightly unequal, the right being slightly larger than the left; right is irregular and is practically immobile to light; the left reacts slightly. Reaction to convergence and accommodation is present. There are no signs of cranial nerve involvement. No tremors of facial muscles, even in forced movements. There is a very slight tremor of the extended fingers. No adiadokokinesis. Coordination tests well executed. Muscular power and tonus are normal. Deep reflexes of the upper extremities are normal. The knee jerks are slightly hyperactive. Achilles reflex rather lively on the left; sluggish right. No Babinski. The abdominal reflexes are very sluggish on the right and normal on the left. Cremasteric reflexes sluggish on both sides. There is evident swaying in the Romberg position. The gait is normal. There is no spontaneous speech defects nor is one elicited with test phrases. Elementary calculations were well performed.

Mentally the patient is at present well oriented, in very good touch with his surroundings, memory is good, and his insight and judgment can be considered as fair. He still maintains slight persecutory ideas, which, however, do not appear spontaneously but are

apparent only after some questioning. He is still slightly irritable but, on the whole, considering his age, his mental reaction cannot be considered as far from normal.

Compared with his previous condition, he is a case of paresis which has improved quite remarkably clinically while, serologically, the cerebrospinal fluid Wassermann has remained unaltered and the colloidal gold curve continues to be paretic in type.

Case illustrating the disassociation between the serological improvement following malaria treatment.

Case IV.—J. T. F. Admitted April 20, 1923. Examination on admission revealed a rather overactive, affable male of thirty-nine years. There was a history of an initial lesion at the age of twenty-three.

The positive neurological signs were irregular and sluggish pupils, slurring of the speech, tremors of the tongue, lips and hands, and increased deep reflexes.

From the mental point of view, his stream of talk was excessive, irrelevant and incoherent. He was very boisterous and profane in his remarks. Marked euphoria was present as was emotional disharmony. He harbored visual and auditory hallucinations and had delusions of a markedly grandiose nature. He was completely disoriented; memory for recent and remote events fair. His insight and judgment were very poor. On the whole, the mental examination revealed considerable deterioration.

On August 1, 1923, this patient received the malaria treatment. He had a series of ten paroxysms at irregular intervals. His serological findings prior to the inoculation were as follows:

May 4, 1923—Blood W.R. 4 plus, Cerebrospinal fluid W.R. 4 plus, Globulin 2 plus, Cells 57, Gold curve 5554321000.

Following the treatment, the findings were as follows:

November 14, 1923—Blood W.R. negative, Cerebrospinal W.R. 4 plus, Globulin 1 plus, Cells 8, Gold curve 5455421000.

April 23, 1924—Blood W. R. Acetone negative, Cholesterin 1 plus, Cerebrospinal W.R. 4 plus, Globulin negative, Cells R.B.C. Gold curve 3333210000.

August 27, 1924—Blood W.R. negative, Cerebrospinal fluid W.R. 4 plus, Globulin trace, Cells 7, Gold curve 0122100000.

January 30, 1925—Blood W.R. negative, Cerebrospinal fluid W.R. negative. Globulin trace, Cells 4, Gold curve 0001110000.

June 9, 1925—Blood W.R. negative, Cerebrospinal fluid W.R. negative, Globulin 1 plus, Cells, R.B.C. Gold curve 0123333100.

September 9, 1925—Blood W.R. negative, Cerebrospinal W.R. negative. Globulin 1 plus, Cells 4, Gold curve 0123310000.

April 4, 1926—Blood W.R. negative, Cerebrospinal fluid W.R. negative, Globulin 1 plus, Cells 6, gold curve 1111100000.

At present this patient remains in good physical condition.

Neurologically, his pupils are unequal, the right being slightly larger than the left; both are irregular; reaction to light is absent. The oval of the mouth is deviated slightly to the left as is the tongue. His speech defect has become more marked. There is slight Rombergism. The deep reflexes are sluggish. The abdominal reflexes are not elicited and the cremasteric reflexes are very sluggish. The Achilles reflexes are normal and there is no Babinski. Coordination tests are well performed. No adiadokokinesis. There are no tremors of the hands or the fingers.

From the mental point of view his stream of talk remains rambling, incoherent and irrelevant. Emotionally he is flattened. He continues to be delusional and the delusions remain grandiose in their trend. He denies hallucinations but they are undoubtedly present. Memory remains very poor; he is disoriented in all spheres; and his insight and judgment are totally lacking. On the whole, there has been no clinical improvement while, serologically, the reverse has been true.

* * *

All our cases, except a few, have received intravenous treatment, following malaria inoculation. The amount of the treatment has varied from case to case having been intense in some and mild in others. An important problem, from the theoretical aspect, is to establish, to what extent the malaria alone is responsible for the serological improvement or even serological recovery and to what extent the following intravenous treatment induces the above mentioned changes. In other words, how does the malaria treatment act? Does it act alone or does it make the tissue more accessible to the intravenous treatment, following. Our material still leaves the question unsolved, although we must admit, from the practical point of view, that malaria is responsible for the improvement acting either directly, or indirectly in paving the way for the intravenous treatment.

As a matter of fact, we never knew before this era, such surprising serological improvement, following thirty-six months, a negative Wassermann reaction of the cerebrospinal fluid, in sixty-eight per cent. of the cases. Although cases were known which, following intense specific treatment, showed serological improvement or even eventual recovery, we must not forget that these cases were few and that not later than 1920. Haguenau in France could still speak, as a rule, of the irreversibility of the serology of general paresis by any kind of treatment. We can then easily believe that malaria treatment must have played, in some way, an important rôle in determining the astonishing results on the serology.

It is desirable that the serology of cases, treated exclusively by malaria, should be reported in order to compare the results with our own. The theoretical question of the method of action of the malaria treatment might then be solved. The very few cases that we have in which no further treatment followed the malaria inoculation, do not permit us to make as extensive a comparison although some of them actually show negative serology.

CONCLUSIONS

1. The treatment by malaria of general paresis exerts a surprisingly beneficial influence upon the serology.

2. The serological improvement gradually increases from fifteen per cent. of the cases within six months from the date of malaria inoculation to eighty-five per cent. of the cases within thirty-six months.

3. The first element which improves following the malaria treatment is the pleocytosis, which is reduced within a few days following the treatment. Of the cases of more than twenty-four months standing, 95.7 per cent. show great improvement while fifty per cent. show a complete reversal to the normal number of cells.

4. The globulin content, although it improves grad-

ually, shows a less pronounced reduction than the cell content.

5. The Wassermann reaction of the cerebrospinal fluid is third in order of improvement. The rate of improvement, which within the first six months is twenty per cent., is increased to ninety per cent. within thirty-six months. Sixty-eight per cent. of the cases of thirty-six months standing show a complete negative reaction.

6. The colloidal gold reaction is the most resistive element to the treatment as within twelve months only twelve cases of the thirty-nine show signs of improvement. The improvement then increases gradually although the reversal to an absolute normal curve is really seldom.

7. The blood Wassermann rapidly improves and within the first six months twenty-eight per cent. of the cases already show a negative reaction. After thirty-six months the percentage reaches eighty-six.

8. Occasionally, in the earlier stages following the malaria treatment, some of the serological reactions are likely to become worse for a temporary period. It has been noticed that in a few cases, although the clinical improvement is unmodified, the serology, especially the colloidal gold reaction, is very apt to become slightly worse.

9. No parallelism was found between the serological improvement and the maximum temperature of the paroxysms while parallelism is evident between the number of chills and the percentage of improved cases.

10. In the earlier periods following the malaria treatment there is no parallelism between the clinical and the serological improvement. The parallelism is found later as within thirty-six months from the date of the treatment all the clinically improved cases show a serological improvement. Conversely, not all the serologically improved cases show a clinical improvement.

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Practical Therapeutics

Physiotherapy Treatment of Ethmoiditis

CHARLES R. BROOKE, M.D.

Newark, N. J.

Physiotherapy, in recent years, has been found to give positive benefit in severe, acute and in more or less resistant chronic pathological and symptomatic conditions of the nasal accessory sinuses.

Diathermy has been found to be the modality of choice in our physical armamentarium for the treatment of ethmoiditis, acute, subacute or chronic stages. The treatment by diathermy must not be considered from any other point of view than heat production, and it should be used only when heat is therapeutically indicated. The application of heat has a distinct value in therapy and diathermy adequately produces heat which can be regulated as to dose, accurately localized in the affected tissues, and conveniently applied to any part of the body. The action of diathermy produces a definite warming of the tissues in the path of the current between the electrodes, the effect of which is an increase of arterial blood supply, increased drainage, analgesic, improved local nutrition and metabolism, thus a decided favorable influence on the disease process.

In the treatment of ethmoiditis, the radiant light and heat from a standard rediovitant applicator, preferably carrying a 1000 or 1500 watt blue bulb, must be given preference to diathermy in the acute stage. The lamp reflector is directed over the face for twenty to thirty minutes, distance tolerance to patient, the eyes are protected with small moist packs of absorbent cotton, if sensitive to light, otherwise the light and heat is applied to the exposed closed lids. When the absorbent cotton is used it should be made to fit snugly over the orbital region, leaving the bridge of the nose, supraorbital and infraorbital regions exposed as much as practical to permit direct irradiation. The application of radiant light and heat produces a definite hyperemia, relieves congestion, the sense of fullness in the head, soothes the pain, thus promoting comfort to the patient.

The application of diathermy in subacute and chronic ethmoiditis can be given in two ways, the modified sedative or the direct sedative, the former being the choice of the writer.

The application of modified diathermy is made in the following way: A dispersive inactive triangular shaped electrode is used, made of 22 gauge combination metal (fifty per cent. each of lead and tin), measuring three by four inches. This electrode is well soaped and applied to the upper cervical and occipital regions, which area should likewise be soaped; the apex fits well up to and slightly over the occipital prominence, the operator being careful to shape and mold the metal to the part to insure perfect contact. It is then bandaged firmly to the part, a semielastic bandage being preferable, to secure good coaptation; the connection is made to one of the d'Arsonval binding posts of a dependable high frequency machine, having true resonance, in the usual manner. The active electrode is a nonvacuum electrode, the size of which ranges in character, depending on the regions to be treated, and is connected to the other D'Arsonval binding post. The position of the patient may be either sitting or lying, the latter is preferable as it permits complete relaxation. At first the active electrode is moved slowly over the involved area, using a current strength which is comfortable to the patient. After warming the affected area, together with the adjacent areas of distribution of neuralgic pains, the electrode is allowed to remain directly over the ethmoid region as long as tolerable to the patient. This concentration can be made only for one half to one minute duration but must be repeated in sequence with first step of the application for twenty minutes duration.

The application of direct diathermy is the choice method in uncomplicated ethmoid sinus disease. In this application the active electrode is a strip of metal placed over the affected ethmoid region or regions of sufficient size to cover the forehead, extending to temporals and wide enough to fit over the supraorbital ridges. The inactive dispersive electrode of the same material but larger is placed over the upper cervical spines. A current strength to tolerance of the patient is allowed to pass for twenty to thirty minutes duration, the electrodes being moistened and bandaged on in the usual way, being always careful to secure firm coaptation to prevent arcing of the current.

In pansinusitis with neuralgic pains of a varying intensity, the combined application of direct diathermy and modified diathermy has given notable results. This combination treatment should be given for about thirty minutes, allowing about twenty minutes for the direct and ten minutes for the modified types of diathermy.

The application of intranasal high frequency and intranasal ultraviolet rays are invariably given following the application of radiant light and heat or diathermy to the facial regions, for relief of ethmoiditis.

The intranasal high frequency application is given with a nonvacuum insulated nasal electrode and is attached to the Oudin terminal of a high frequency machine. Before the electrode is inserted into the nasal cavity, the current strength should be tested on the operator's lip until a soothing warmth is felt; this will be about the currect dosage to be tolerated by the patient. The electrode is inserted as far back into the nasal chamber as possible, beginning at five minutes duration, increased one minute until ten minutes is reached which is the maximum dose to each nasal fossa. The intranasal high frequency currents thoroughly heat and vascularize the nasal mucous membranes increasing drainage and thus assisting restoration of normal function about the sinus openings.

The intranasal application of the ultraviolet rays is given with a nasal quartz applicator attached to a watercooled lamp. The applicator at first is inserted

gently as far back into the nasal cavity as possible, then is withdrawn slowly to permit of fractional irradiation to the entire mucosa because most of the rays are emitted at the tip. The tip of the applicator can be directed upward or downward approaching the affected sinus opening as near as possible. Duration of treatment at first lasts one minute to each nasal fossa, fractional irradiation about fifteen seconds, this is increased one half minute each subsequent treatment up to five minutes or lower depending on the symptoms of the case. The ultraviolet rays produce a definite bactericidal effect on the nasal mucosæ.

During the course of treatments outlined for the relief of ethmoiditis patients usually remain at their work in comfort. The progress in nearly all cases is uniform and ultimately beneficial. The length of time to obtain maximum improvement varies in accordance with the individual case, duration, type of infection, its severity, extent of involvement and the bodily resistance of the host.

Treatment should be given at first daily, gradually reducing to alternate days and then to more infrequent applications as symptoms require. It has been noted that when treatments are started during the onset of symptoms, prompt relief can be attained after a few applications, otherwise, treatments must usually include a prolonged course to reach maximum improvement.

CONCLUSIONS

1. Many favorable results have been achieved by the physiotherapy technic above described in ethmoid sinus disease.

2. Radiant light and heat, diathermy, modified and direct, intranasal Oudin high frequency current and intranasal ultraviolet rays are the effective modalities used.

3. The exact technic of application and the sequence of modalities employed are essential for success.

13 Pennington Street.

The Treatment of Hepatic Venous Cirrhosis

CHARLES GREENE CUMSTON, M.D.
Geneva, Switzerland

(*Concluded from page* 620)

It is for the same reasons and frequently because the hepatic cell is seriously involved in venous cirrhosis that surgical treatment has been disappointing, namely omentopexy. In actual practice, the peritoneum in venous cirrhosis is pathologically changed so that its absorptive power is decidedly impaired, hence the operation does not relieve the portal hypertension nor the insufficiency of the collateral cavo-portal circulation, and I regard it as both useless and not devoid of danger in these cases.

The treatment of venous cirrhosis has still another objective, namely, to deal with the cause of this affection. We all know that alcoholism is of first etiological importance, but it is not the only one and the part played by syphilis, combined with alcohol, appears most important at the present time. The therapeutic results go far to sustain this supposition. Specific treatment to be effective must be begun early in the process. It becomes both useless, nay dangerous, if there are marked symptoms of hepatic insufficiency and if the liver, completely sclerosed, presents degenerative lesions.

Let us first consider the old specific medications, mercury and potassium iodide, for we at least know their virtues and inconveniences.

Mercury has long been used in diseases of the liver. Bouchard gave calomel by mouth to cirrhotic patients. He ordered one centigram daily in fractional doses as a cholagogue and specific.

During the last few years the double salts of Hg. have been given by intramuscular, intravenous and subcutaneous injections. Hg. cyanide, which is a good diuretic as well as antisyphilitic, has been found effective by many competent observers, but it must be used with prudence. The first injection should not exceed one half to one quarter cubic centimetre of the solution, in order to ascertain the patient's susceptibility to the drug. The care of the teeth, it is needless to say, must be adequate. The functional activities of kidney and intestine are to be examined into and as advised by Milian, a little bismuth bicarbonate may be simultaneously given *per os* to prevent trifling diarrhea, although some looseness of the bowel is far from detrimental in portal hypertension.

The simultaneous use of hepatic extract, especially in subcutaneous injections, will allow one to give a series of ten injections of cyanide without any intolerance to the drug or the development of mercurial intoxication. This new notion, due to Villaret, is particularly important and in respect of the arsenic compounds it has a very great bearing, because the accidents of shock, which in ordinary circumstances are frequently due to hepatic *therapeutic insufficiency,* are to a great extent avoided in instances of true hepatic insufficiency from venous cirrhosis.

The cyanide is, according to my experience, the most effective mercurial salt at our disposal, but there are subjects who offer a particular intolerance to this drug, in which case it is clear that some other soluble salt—benzoate, biniodide or salicylarsinate, etc.—must be substituted, although their therapeutic effect is less marked, and moreover, they do not possess the diuretic property of mercury cyanide.

It is my opinion that the insoluble mercurial preparations are not to be employed in cases of venous cirrhosis even when syphilis is unquestionably manifest because accumulation of the drug is all the more to be feared on account of the doubtful functional value of the hepatic parenchyma in these subjects.

Potassium iodide alone, or in combination with mercury, may often be used with advantage.

By gradually increasing doses the patient may be made to ingest from three to four grams a day and when given in keratin coated pills of 50 centigrams each, I have been able to keep cases on doses of four to five grams in twenty-four hours for weeks, without the slightest intolerance or any of the untoward complications usually ensuing when the salt is given in a solution. I also am convinced that KI is the only one of the salts of iodide possessing any real therapeutic value.

We now come to the consideration of the newer remedies, namely, the organic arsenical salts and bismuth derivatives. The organic arsenical salts, especially the arsenobenzols, are to be rejected. In apparently healthy young syphilitics in whom the hepatic parenchyma is functionally intact, they only too frequently develop—if the real truth were known—icterus and other evidences of hepatic intoxication from the drug. Hence I assume that a liver already diseased and functionally insufficient, should not be subjected to further highly toxic influences.

On the other hand I believe that the bismuth salts are highly valuable. We know their unquestionable value in the cardiovascular syphilitic processes and personal experience has been satisfactory in the treatment of venous cirrhoses. It is hardly necessary to say that during treatment the mouth, teeth, kidneys and digestive tract are to be carefully supervised. Any of the soluble or insoluble salts may be employed, but perhaps the oxide of bismuth is, on the whole, preferable to all the others, given in intramuscular injections. During treatment with bismuth injections of hepatic extract are to be given.

The effect of bismuth on the ascites has at times been remarkable when treatment has been started early in the process. But it must be prolonged and always associated with hepatic extract injections.

Treatment of Recent Pott's Fracture.—C. M. Greenslade (*Lancet,* February 6, 1926) has achieved uniformly successful results with the following plan of treatment:

Röntgenograms should be taken as soon as possible to confirm the clinical findings. The earlier the nature of the injury is accurately diagnosed and treated the better; reduction is easy when the soft parts are not fixed by adhesions; any pressure of bone ends on the skin, bloodvessels, or nerves is relieved; the muscles have not been contracted down and shortened the limb, nor has the blood and lymph exudate become organized.

Spinal analgesia is the ideal method of rendering the manipulations painless, but any form of general anesthesia may be used when spinal analgesia is not available for any reason. The only contraindications to the use of spinal analgesia are extreme youth of the patient, certain nervous disorders, and the desire of the patient to be "put to sleep." In the case of adults, 30 minims of nepenthe by mouth twenty minutes before the operation are helpful. The solution used is five per cent. stovaine with glucose; 1 c. c. of this contains 6 cg. of stovaine, an ordinary dose; however ⅓ c. c. gives adequate relaxation for manipulations around the ankle.

About ten minutes after the injection, the manipulations are begun. The surgeon stands to the inner side of the affected limb. Where the injury is on the left side, he grasps with his left hand the inner surface leg immediately above the fracture. He takes the heel in the palm of his right hand, the fingers of this hand extending around the outer border of the foot on to the dorsum. The reduction is effected by pushing the leg downwards and outwards with the left hand, and pulling the foot upwards and inwards with the right. Occasionally traction is required, but usually the reduction is carried out by the one movement described. Should there be difficulty in overcoming the backward displacement, the patient is brought down the bed so that the foot projects beyond the end. A loop of toweling is then placed over the lower part of the leg. The heel is supported by both hands. The surgeon places his foot in the loop. By pressing downward with his foot, and at the same time lifting upwards with his hands, the backward displacement is corrected. The fewer the movements made to get the alignment, the less will be the damage to the soft parts.

The aftertreatment consists of removal of the bandage and daily effleurage with as little disturbance of the fragments as possible. As soon as the major part of the swelling has subsided, ambulatory treatment with a slight removable plaster cast or a plaster of the Delbet type is instituted.

A Powerful Remedy in Obesity.—Desider Bayor (*Wiener klinische Wochenschrift,* March 18, 1926) was induced to try the use of mercurial preparations for the reduction of obesity by the observation of the marked reducing effect of mercurial preparations in syphilitic patients. Novasurol was selected because of its excellent, markedly diuretic effect, but only in such cases as show a perfectly healthy renal system.

Before beginning the novasurol treatment, every patient must be subjected to a most careful examination, with special attention to two very important points, namely, the condition of the kidney and a possible idiosyncrasy of the body toward novasurol. The latter is contraindicated with the slightest indication of a deviation from a normal kidney function. In addition, dietotherapy and iodine treatment were given. The tolerance test consisted of an injection of 1 c. c. of novasurol solution and the observance of any general symptoms, as retention of urine. The treatment is discontinued on the occurrence of the slightest evidence of gingivitis, diarrhea, albuminuria, or general weakness, even though such a small dose of novasurol would indicate a reducing effect. In all other cases, regardless of whether the obesity be due to endocrine disturbances or over feeding, the novasurol treatment may be given.

The best results are obtained, when in addition to the novasurol injections a strict dietary régime is observed. The daily ration should amount to 1200 to 1300 calories, but if the patient is still hungry, 200 to 300 calories more may be allowed.

In the beginning, 1 c. c. of novasurol is injected intragluteally every six days. A reduction in weight of 1.5 to 2.5 kg. is observed within twenty-four hours. The additional use of pluriglandular therapy is of advantage. During the novasurol treatment, the patient should avoid the ingestion of halogen salts to avoid gastrointestinal disturbances. During prolonged treatment, the patient should be made to lose about 0.5 to 2.0 per cent. of his weight every week.

Historical Medicine

The Legacy of Greece to Galen

V. Its Survival

JONATHAN WRIGHT, M.D.
Pleasantville, N. Y.

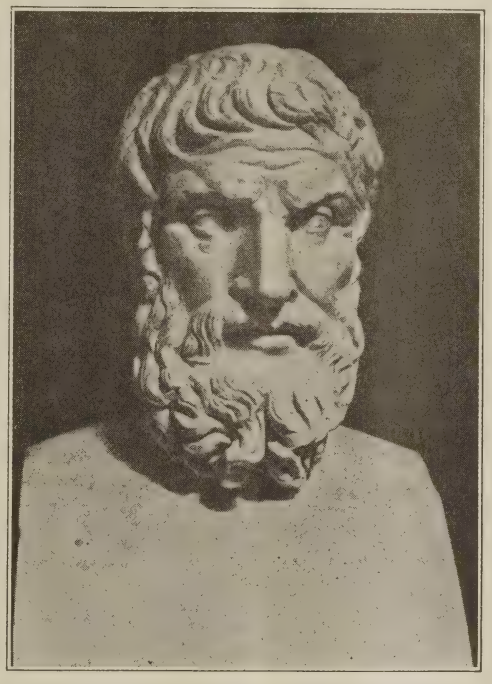
In the former pages we have found Galen frequently in dispute with Aristotle, but not infrequently acknowledging his merit and bowing to his authority. We have seen that Aristotle's dictum that Nature does nothing in vain incited him to the achievement of his greatest work, the *Utility of the Parts*. Galen was not even willing to dispense with the ancient terminology in the legacy he received. He continued to speak of Nature and the Soul when it was becoming the fashion to speak of the vegetative soul and the sensitive soul (1a). He named his famous work with that of Aristotle in mind on the *Parts of Animals*. He is not lacking in reverence for Aristotle then, but when he encounters the Stoics and Peripatetics who followed Aristotle he does little but flout them. We have seen him in acrimonious argument for page after page with Chrysippus, but on Epicurus he dwells with scarcely less censure. Epicurus was in vogue in philosophy for many centuries in the decaying glory of Greece and the rising glory of Rome. Then and long after, even up to the present time, his philosophy has been distorted into one of selfish indulgence and narrow minded views. He was born in Samos in 341 B.C. and having known poverty he taught the people of Athens how to laugh at it and the misfortune which then lay heavily upon them, but this was something Socrates had preached before him. It was a tenet of many Stoics and Sceptics and Cynics after him who followed in the wake of Zeno and Diogenes.

It was these brought from Asia or at least from its Ionic provinces the demonstration of the fallibility of the senses. Such tendencies as this in the philosophy of Athens Epicurus met with the doctrine of sense impressions—veritable dents as it were in the organs of sense by matter, I presume, impinging on them. Thus he claimed there was no escape for us from the conviction we are, after all is said, literally in touch with reality. It was thus he applied the physical theories of Leucippus and Democritus and he expanded them into the doctrine out of which Lucretius made his great poem. Like Galen with the humoral doctrines of the ancient Greek physicians he went further than Democritus and attributed apparently some sort of capability of movement to the atoms independent of what they acquired from without, but which I do not comprehend unless there is in it a trace of Aristotelianism. It is singular that a doctrine founded at least on what passed for the irrefragible truth of one civilization and inspired the literature of another should not be represented by the original words in any degree of its author, but should exist only in the fragments of it cited by other authors. We can not help thinking Pythagoras and Orpheus and Democritus and Zeno and Epicurus, though all of them did not teach by their writings, not to mention a host of others of less prominence who yet influenced the thought of their generations, must have left us a scrap of parchment or papyrus or copy of their own works if they so profoundly influenced the history of thought. We know them only in the quotations of others using them and twisting their words to their own purposes. Quite aside from the latter motive, Heiberg, whose recent work I shall have occasion to mention here shortly, shows us how apt these citations were to be incorrect and badly rendered.

Why is this? It is true the Epicureans made no great discoveries for Greek philosophy. Neither did Cicero nor Seneca nor Pliny contribute any thought to it at Rome. We have practically all these men wrote, a great part of it in each case, at least. Epicurus and Chrysippus it is true seem to have made little or no addition to the thoughts of the world before them. They too wrote enormously, but it all perished. Hippocrates lives for us in his own words, but of Empedocles, a very great thinker and a great poet, we have only sorry fragments; of Democritus scarcely more than a tradition and hardly that of Leucippus. Epicurus, whatever originality he lacked, was a great thinker and he made a wider appeal to more men probably than any who preceded him, not excepting perhaps the greatest of them. In the Graeco-Roman world why did his works perish and theirs live? He did not lack disciples as long as it lasted. Many knew his sayings by heart. One may well pause before taking refuge in the usual suggestion, weighty though it is. Plato and Aristotle appealed to man forever and the whole man, intellectually, morally and psychically, Epicurus only to man for a time and to a part of man. The former were nearer the heart of man's nature and they more often made an appeal to those able and desirous of preserving the tokens of what seemed to them wisdom. There can hardly be question of that, but there can hardly be any question that the *Morals* of Seneca are twaddle and they lived. Probably Chrysippus was worse. Seneca still lives in his commonplaces and Chrysippus perished in his own. They were both intolerable bores, but the words of one only lived. We can but conclude that Chance plays a very large part indeed in this survival of the fit and the unfit.

The wonder is any survival at all. Professor Heiberg (2) has paused long enough from his other classical studies to remind us of this. The Assyrian tiles and the Egyptian wall surfaces have preserved for us literatures, which simply as literature to the common reader seem hardly worth preserving, though Breasted has made an astonishing use of it in his own writings which may well claim a place in literature. The wax tablet of the Greek was as negligible as the school boy's slate. The papyrus manuscripts not only through the Egyptian but through the Greek and Roman eras have a few of

them come down to us in shreds from ages as remote as the hieroglyphs on the walls of Karnak. Their frailty is such they crumble at a touch even in the dry lands of the Nile, more of them agents' accounts than verses of Homer. Pasted on the lids inside of coffins and chests, untouched, they have revealed to us much history, but only a mere spark of the literature that once filled Greece and Rome with its effulgence. Egyptologists seem to have found literary merit in the writings of the Middle Period of early Egyptian history, the *Story of Sinuhe,* the *Eloquent Peasant,* the *Shipwrecked Sailor* and other compositions even of a later epoch, but like the *Poem of Gilgamesh* they require wits sharpened by the sands of the desert and understanding as ponderous as the pyramids to extract literary value from them. Yet the Battle of Kadesh and the fight Rameses II put up there, as Breasted tells it in the recent Vol. II of the Cambridge Ancient History, stirs the blood as though a blast from Homer's trumpet under the walls of Troy. These I think we may for the present leave aside, but the papyrus from the Nile was surely a slender reed on which to hang the story of the glory of Greece. What a breath in a foreign land may puff away is not a sure material to preserve the treasures of thought of a hundred generations. Parchment in the cloisters and the monasteries, sleeping there some of it long after the religion in them was dead has preserved the most of it, which I will not stop to summarize in Heiberg's tale, but the wonder grows as we read his dissertation that we have anything even of those once able to quote at second hand from Epicurus and Zeno.



Term of Epikuros (Rome, Vatican) (*after Hekler*)

Asclepiades we learn enough of from the reproaches of Galen but very little more has been preserved for us. He excited Galen's spleen even more than Chrysippus, but what he holds up for our ridicule in the whirligig of time often appeals to us as far more near what we think we now know than is to be found in the discourse of Galen. It is on Epicurus and Asclepiades he falls with particular fury. With the latter he is indignant for saying (1b) that purgation is purgation. It is of no consequence whether you get rid of offending matter in the bowel with a cholagogue or a hydragogue, so that you get rid of it.

"Asclepiades is crazy when he tries to induce us not to believe our senses" or to profit by our experience. Give a cholagogue to a person whose bowels are loaded with phlegm and the resulting evacuation harms rather than benefits the man, but after the reader of Galen gets this and much more about the rascalities of Asclepiades he sighs to think the latter after falling from a ladder and breaking his neck when a hundred did not leave something of his own for us pasted on the inside his coffin lid. Galen meets the shade of Asclepiades, dead for another hundred years or more, in the medical arena and quarrels with him on many a subject. He more often than not upbraids Epicurus too for his philosophy, but he quotes him to the disadvantage of Asclepiades on scientific grounds here. Epicurus admits that at least iron is attracted by the magnet, straw is drawn to the amber. The atoms of iron and of the lodestone, he says, go out to meet one another, become mingled together and adhere to one another. Epicurus at least agrees there is such a thing as attraction and by virtue of it food is assimilated and distributed and the excrements are voided by the action of purgatives. Just as similar qualities of the lodestone atoms and of the iron atoms attract one another, so a cholagogue draws the bile and a hydragogue carries the water out of the bowel with it. In this connection we may take note how although having this "attraction" bee in his bonnet, a theory always handy, he nevertheless does not run into the error of earlier physiologists, Praxagoras and Philotimus, who believed just as the expansion of the thoracic walls sucks air into the lungs the vessels suck blood into themselves when they dilate. Very likely then this "attraction" of Galen was not the "void" which nature abhors. It was by demonstration (1c) and by experiment on the blood vessels he refuted these predecessors, but we may well imagine that the ancient Greek in this respect went astray having the Magnesian lodestone marvel in his mind.

While this experimental work kept Galen from this kind of error in his legacy he nevertheless was influenced by the lodestone phenomenon as to the intestinal action of drugs. He says Asclepiades rejects this suggestion and we greet him as a hard headed old sinner, but yet the latter accepts the principles of Epicurus, who gave foolish reasons to explain, as above, the action of the magnet. Epicurus was not the originator of this train of thought. We find it plainly in the fragments of Empedocles how thus the tree roots draw nutriment from the ground, the stomach walls from the food. For Empedocles too in vision the light particles from the eye go out to meet the particles from the object. Thus buried is truth, a kernel among the husks of error, but neither the husk nor the kernel originated with Epicurus. Galen's criticism of this is that the little lodestone would run out of atoms after a while and there would be nothing left of it.

Epicurus wrote many books (1d) about the nature of matter—as to whether it was single or multiple, agreeing with Democritus. Both of them elsewhere Galen attempts to refute (1e) when they deny change

in the atoms, they ascribing the phenomena of change to the nature and size of them. From this, Galen says, Asclepiades finds support for his doctrine that drugs on administration are not essentially changed either. Galen says that both Empedocles and Hippocrates held to the opinion there was no mutation of the elements, but all change in phenomena was due to their combinations and separations. (1f) It is difficult indeed to follow the shades of differentiation in Galen's accounts of the ancient doctrines, for he is neither always explicit nor always consistent and sometimes contradictory when he deals with the constitution of matter, but they are easily seen to enter into his own cogitations and sometimes thus confusedly.

He rests his teleology not only on the aphorism of Aristotle declaring nature never works in a futile manner but on the passage in the second book of the *De Anima.* An eye remains an optical organ whether it is built like that of a crab or not. Walking can go on with the leg of an elephant, of a goat or of a man. Whereupon Galen, despite his adherence to the doctrine, makes a treacherous stroke at the hand which raised him for its lack of skill in dissection and the mind that taught him for its lack of perception in observation. "If this is so, dearest Aristotle, do not by the form of the body as in many of thy awkward attempts, do not judge by the form of the nerve or the tendon, but by its use." (1g) You may reject the phraseology of these old writers so as to eliminate the interposition of God or entelechy or Nature's demands, but to lose sight of the end in view, however far off, of structure is usually to lose your bearings altogether. To make it the rudder by which you steer is quite another thing and, despite his inconsistency, Galen far more than Aristotle exhibits the strange ports arrived at by such preponderating pilotage. Chemistry and the microscope often allow us now—or rather the infinite specialization at which we have arrived in science often places the end in view at such a distance we can sometimes dispense with the help of physiology or etiology either, but by no means always in our objectivity even now. The "method" of science is a joke and the "decalogue of science" is a subject for jeers. There is no method which will not often betray us into false paths. There is no method to save a fool from his folly and there is no law so pernicious as one which can not be broken. All advance is made by kicking over the barriers.

Aristotle was conscious of this. Teleology was only one path to the truth even for him, teleology no more than etiology. He declares (3) that causation practically is simply a matter of enlightenment—how far one sees the lengthening file and the converging ranks of causation behind the phenomena he means and he might have added no two persons see them exactly alike. As Robin paraphrases (4) it, it is a matter of the point of view we take of things in general. Medical etiology is usually so smug as to induce nausea. That is the feeling we get so often in reading Galen and so seldom in Hippocrates and Plato and Aristotle. Plato placed his triangles in great prominence in the mechanism of his sense of taste, but we do not find him straining his eyes out with trying to adapt them to the mechanism of the other senses. Aristotle's conjecture that sound exists where there are no ears to hear it does not travel with his general voyaging, but there is no moaning at the bar when he leaves it behind. Galen is like a porcupine. You can approach him at no angle that you are not met by the prickers of his humoral theories and like the fabulous beast he is ever darting them at the enemy, often with no more consistency than we have just seen him adjuring Aristotle, who taught him teleology. Aristotle did not well understand that hearing was an air limited sense, though he knew of Alcmaeon's theory of air waves beating on the caverns of the ear, but that did not prevent him from a weird prophetic doctrine of sense in general which has fallen true under evolutionary research. It was Aristotle taught us touch was the fundamental sense and out of that long ago seerlike pointing of the finger we came to the conception of the irritability of protoplasm. Helen Keller can hear with her fingers and the tactual interpretation of speech is an accomplishment which can be taught in the class room (5). Neither can we find cause to quarrel with Aristotle for saying it is only matter in motion which is revealed to the senses. The Unmoved Mover is hidden from them. We see in Aristotle that causation *is* a matter of enlightenment and that Galen is myopic in the matter of medical etiology. Yet as we have seen in his commentaries on the elements and in his endeavor to benefit by the legacy of the greater men before him he had a historical sense to which the science of yesterday if not altogether that of today is blind.

Finally, though I have already occupied considerable space in this essay in wondering why we have any legacy at all left us from Greece in the way of letters and philosophy and medical science, I wish to occupy a little more. We are puzzled to conjecture why the writings of genius ever perish and the writings of mediocrity ever survive. Eckermann was Goethe's Boswell without Boswell's talent and he became the butt of the wit of literary Germany. Heine says he met a man coming weeping along the road out of Weimar in 1832. Asked the cause of his sorrow, the man sobbed: "Goethe is dead and Eckermann still alive." That is the way we feel sometimes about the classics. Galen has his place in the temple of fame as unquestionably as Goethe, but when we seek him in the Hall of Fame of his day we don't find him and we are already smiling broadly at some of the premature figures in that of our own. Our wonder, if not our smiles, is excited that such a vast collection of the writings of any one man of medicine should have survived whose contemporary fellowmen did not regard him of sufficient importance even to mention. Asclepiades lives in the pages of Cicero who thought him important enough to court his favor. I have alluded in the former essay to the notice of Galen by Athenaeus, who may have been a contemporary of his in the time of Marcus Aurelius. Oribasius quoted him or collected his works for Julian the Apostate two hundred years later. Paulus Aegineta, fully five hundred years after Galen died, in his collection of notes from the ancient writers, mentions Oribasius, and Galen with less emphasis and as though he too might have been a collector of the works of others rather than an author who wrote chiefly his own.

Without Galen we would have known little indeed of Greek medicine outside of Hippocrates and very

little of Greek philosophy outside of Plato and Aristotle. Galen says he was physician to Marcus Aurelius and Commodus and the great about their courts —that he was widely known to distinguished men everywhere throughout the empire and was in frequent correspondence with many of them—he intimates his fellow practitioners thought so much of him they were constantly entreating him to lecture to them and write books for them—that he was so famous in his lifetime books were given his name, which he never wrote, in order to sell them. Others rubbed out his name and put their own at the head of books he did write, so prized was his science. In modern times he would have been in all the Sunday papers. He traveled widely everywhere in the Mediterranean lands—and not a word of his time have we about that famous man, which has come down to us unquestioned. It is "time which antiquates antiquities. . . . In vain we hope to be known by open and visible conservatories."

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Rudyard Kipling on the History of Bacteriology

LOUIS J. BRAGMAN, M.D.
Syracuse, N. Y.

In *McCall's Magazine* for September, 1926, there is a story by Rudyard Kipling called *The Eye of Allah,* which deals in a romantic style with the beginnings of bacteriology and the microscope in the medieval age, and which reveals the inevitable conflict between science or light on the one hand, and the Church or darkness on the other.

John of Burgos, an artist employed as an illustrator of manuscripts in a monastery, had procured a microscope in his travels in the East. Primitive in its construction, it is described as follows:

"A stamped leather box, some six or eight inches long, wherein, bedded on faded silk, lay what looked like silver bound compasses of old boxwood, with a screw at the head which opened and closed the legs to minute fractions. The legs terminated, not in points, but spoonshapedly, one spatula pierced with a metal lined hole less than a quarter of an inch across, the other with a half inch hole. Into this latter John, after carefully wiping it with a silk rag, slipped a metal cylinder that carried a glass or crystal, it seemed, at each end."

Brother Thomas, the Infirmarian of the monastery, had for many years been speculating on medicine, especially on the cause of disease. While discussing a type of spotted fever which was prevalent at the time in England and Italy, he declared:

"I confess myself at a loss for the cause of the fever unless—as Varro saith in his *De Re Rustica*—certain small animals, which the eye cannot follow enter the body by nose and mouth, and set up grave diseases."

The artist, in the course of his observations through the microscope, had seen patterns of moving objects that appealed to him as suitable models for his drawings of devils. Accordingly he produced the following: "Some devils were mere lumps, with lobes and protuberances—a hint of a fiend's face peering through the jellylike walls. And there was a family of impatient, globular devilings who had burst open the belly of the smirking parent, and were revolving desperately toward their prey. Others patterned themselves into rods, chains and ladders, single or conjoined, round the throat and jaws of a devil that had made good his refuge. And there were granulated and conglomerate devils, mixed up with the foam and slaver where the attack was fiercest. The border to the picture was a diaper of irregular but balanced compartments or cellules, where sat, swam or weltered, devils in blank, so to say—things as yet uninspired by Evil—indifferent, but lawlessly outside imagination. Their shapes resembled, again, ladders, chains, scourges, diamonds, or globes."

The progressively minded Infirmarian had shrewdly recognized that these strange shapes, seen through the magnifying lenses, were possibly the hidden causes of diseases, and expressed himself to that effect: "As in the water, so in the blood must they rage and war with each other!"

An Oxford Friar, who was visiting the monastery, none other than Roger Bacon, the famous philosopher, was similarly impressed, and characteristically wished to verify these contentions by experimentation. But the Abbot, Stephen de Sautre, despite the fact that he was a man of science, a doctor of medicine, and "physicus before he's sacerdos," was sceptical about the advisability of keeping the instrument, stating thus his reasons:

"It would seem my choice lies between two sins, to deny the world a light which is under our hand, or to enlighten the world before her time. What you have seen, I saw long since among the physicians at Cairo. And *I* know what doctrine they drew from it. . . . But this birth is untimely. It will be the mother of more death, more torture, more division and a greater darkness in this dark age."

So despite the pleadings of Roger Bacon and Thomas the Infirmarian, the Abbot pitilessly destroyed the microscope, fearful of the wrath of the Church. And thus, by curbing a development of a knowledge of bacteriology and microscopy, and by stifling an understanding of the germ theory of disease, can the progress of medicine be considered to have been retarded by at least several centuries, according to this stimulating tale of Rudyard Kipling.

Editorial Articles

THE NEW YORK ACADEMY OF MEDICINE

At last the New York Academy of Medicine is suitably housed in a building the beauty, dignity, size and convenience of which are commensurate with its importance, and the needs and value of the institution. The history of the Academy, presented elsewhere in this issue, is one of which not only the medical profession of New York, but every citizen may well be proud.

Ever since its foundation in 1846, for the initial meeting leading to its organization was held on December 12, 1846, though formal organization was not effected until the following January, the New York Academy of Medicine has been a powerful agent for good in the life, health and welfare of the community. Not only has it brought together for consultation, for mutual instruction, and for guidance the members of the medical profession, but it has always played a most beneficent and helpful rôle in the affairs of the city. The eloquent tribute paid to the Academy during the celebration of the completion of the new building by the chief magistrate of New York was well deserved.

The organization of our first municipal board of health was due to the efforts of the Academy of Medicine. There are many other directions in which it has contributed to the public welfare.

The list of its early presidents and orators, which appears in the paper by Dr. Linsley Williams on another page, reads like an honor roll of the medical sciences. The men who made the Academy of Medicine what it is today have been great leaders of thought and of men. It would be an invidious distinction to name any one individual from among the fellows and officers of the Academy who have rendered signal service to the profession and to the community. But no one at all conversant with the history of the progress and development of the medical sciences can peruse that list without meeting many fair names and famous which have been inscribed in high places in the hall of scientific fame.

The New York Academy of Medicine offers freely to all practitioners and students, whether Fellows or not, frequent opportunities to hear and to see the leaders in every special field. Here the general practitioner, the orthopedist, the laryngologist, the gynecologist, the urologist, the psychiatrist, in fact the specialist in every field is offered an opportunity to forgather with coworkers in his own field for discussing their own special problems, and to hear the latest word from the leaders in that field.

At one of these meetings, now many years ago, Dr. George W. Crile spoke eloquently and convincingly of anociassociation. He showed on the screen the disastrous physical effects of noise on the brain cells. Since that time the barbarous clangor of bells, and the hooting of whistles as signals have been banished from the hospitals, to the great benefit of many thousands of grateful patients. And this was at but one of the thousands of meetings which have been held within the walls of the Academy. The physician who avails himself of the opportunities so freely offered by the meetings of the Academy and of its several sections, will be afforded invaluable opportunities for contact not only with the local leaders but with the great medical teachers from every section of the world.

To the serious student the library of the Academy affords invaluable assistance. More than a thousand medical periodicals in all the modern languages are on the open shelves for free consultation by all whether Fellows or not. A large and elegantly appointed reading room contains the bound volumes of all the leading medical periodicals for the past twenty years so arranged that the reader has free and unrestricted access to them.

And as the institution grows its activities continue to widen. The Public Health Committee has come to be an institution of incalculable value, not only in this community but in cooperating with public health officials in other great cities.

The committee on medical education performs a signal and most unselfish service to all postgraduate students through its Bureau of Clinical Information where the student may see a daily bulletin of all the clinics of Greater New York and may also learn any desired details regarding the opportunities for clinical instruction in all the great European centres. To maintain all these valuable activities requires not only intelligent enthusiasm and competent leadership but also involves large expenditures. Some of the funds for these expenditures are provided by the income from invested funds bequeathed to the Academy, some comes from the annual dues of the Fellows, and this has been materially augmented by a grant of $62,500 a year from the Rockefeller Foundation.

Through the careful husbanding of its resources, a fortunate investment in a site bought but not used, and a gift of more than a million and a half dollars by the Carnegie Corporation, the erection of the new building was made possible. Facing Central Park, on a plot of ground which affords opportunity for still further enlargement, the new building has been so

designed that when, if ever, expansion becomes desirable that expansion can be provided without interfering with the present building. The new building of the New York Academy of Medicine will be a source of civic and of professional pride for all time.

SMOKING AND BLOODLETTING

Fashion, capricious always, is, perhaps, especially so in medicine and surgery. At the present time there is an active crusade being carried on in this country against the use of tobacco. Dr. J. Rosslyn Carp of Antioch College, Ohio, has conducted an inquiry into the effects of the continued use of tobacco and concludes that the habit deteriorates mental capacity. Professor H. Kionka, a German authority, stated some little time ago that there is hardly a single pathological condition which tobacco cannot cause or aggravate, while Sir Humphrey Rolleston in the *Lancet,* May 22 last, holds a middle course.

Dr. Archer and Dr. Everard in their *Panacea, or a Universal Medicine,* being a discovery of the wonderful virtues of tobacco, published in 1659, warmly defended the habit, and for long it was held by the highest authorities to be an efficacious preventive of disease. Thomas Hearne in his diary, 1720-21, writes: "January 21, I have been told that in the last great plague in London none that kept tobacconists' shops had the plague. It is certain that smoaking was looked upon as a most excellent preservative. Insomuch, that even children were obliged to smoak. And I remember that I heard formerly Tom Rogers, who was yeoman beadle, say that when he was that year, when the plague raged, a schoolboy at Eaton, all the boys of that school were obliged to smoak in the school every morning, and that he was never whipped so much in his life as he was one morning for not smoaking."

Bloodletting, at one time the common medical practice, has fallen into disuse. Paracelsus was one of the first to protest against the manifest abuse of the treatment. In the feudal ages bleeding was deemed a necessity. Most of the religious houses had a flebotomaria or bleeding house in which the inmates underwent bleedings or minutions, as they were termed, at stated periods to the strains of psalmody. An old surgical writer divided his chapter on bleeding under the following heads:—1. What is to limit bleeding?; 2. Qualities of an able phlebotomist; 3. Of the choice of instruments; 4. Of the band and bolster; 5. Of porringers; 6. Circumstances to be considered at the bleeding of a Prince.

To bleed on May day was at one time a universal custom. Steele, the writer, tells of a phlebotomist who advertised for the good of mankind to bleed at "threepence a head."

The readers of Smollett may remember in one of his novels the story of a gentleman who, falling down in his club in an apoplectic fit, was immediately made the subject of a bet by two bystanders. The odds were given and accepted, and the wager was duly made, when a suggestion was advanced by a more humane spectator that a surgeon ought to be sent for. "Stay," exclaimed the good fellow interested in the result being fatal, "if he is let blood, or interfered with in any way, the bet doesn't hold good."

About bloodletting, by the lancet, leeches, and cupping or boxing, as it was termed in the days of "good Queen Bess" and much later, the curious may obtain many interesting particulars in the works of Bulleyn, the physician of the Queen.

Venesection was carried to an extreme extent in the seventeenth and eighteenth centuries. John Capley Lettsom, the founder of the Medical Society of London and one of the first physicians of the time, was notorious for his frequent use of the lancet. He said of himself or a lampooner of that age of lampooners said of him:

> When patients sick to me apply,
> I physics, bleeds, and sweats 'em;
> Then—if they choose to die
> What's that to me—I lets 'em.

There is little doubt that in some cases a judicious bloodletting did good, but it became so much the vogue that it was abused without limit, and the reaction against it was so strong that as a medical or surgical procedure it was abolished entirely.

MIND AND MATTER

In the second Halley Stewart Trust Lectures, delivered on October 14, 1926, Sir Oliver Lodge presented a clear survey of the entire field of modern mechanical developments resulting from scientific discovery, and of the influence of new powers of locomotion, communication and control of disease upon progress in general. He maintained that all things considered that influence is excellent; but that all advancement towards the attainment of the welfare of mankind must depend upon the degree in which goodwill prevails, and in which men are inspired by the desire to fulfil that purpose.

Briefly, science teaches the same elementary truth as that which the great religions have consistently advocated. Sir Oliver expounded the nature of the material universe, and its relation to the universe of mind. It is commonly affirmed, as a provisional theory, that the material universe is infinite in space and in time. The human intelligence is capable of conceiving the idea of infinity although not understanding how infinity is possible. The lecturer showed that it is possible that a definite form should possess the quality of infinity. Upon the surface of a sphere there are no beginning and no end, and therefore the possibilities of movement are in a sense

infinite. An alternative hypothesis may be offered, which is that the universe is a purely subjective phenomenon, interpreted by means of the limited perception of the senses, so that if the means of perception were changed the universe would appear entirely different. If that theory were pushed to its logical conclusion it would be necessary to regard the visible universe as in the nature of an hallucination.

As to whether mind produces, or is produced by, matter, it is Sir Oliver Lodge's opinion that for the time being the apparent duality must remain an insoluble problem; but he regards every new discovery concerning the nature of matter as tending to do away with the distinction between mind and matter and to blend the two into that unity which the mind instinctively demands. There is nothing in the material universe but two electric charges, which incessantly revolve about the ninety-two atoms and the various groupings of those atoms. So far as one knows at present, these are the units of which the entire universe is composed. At some stage in its evolution, to inorganic matter is added the mysterious force called life, and in every manifestation of the universe, from the least to the greatest, the same immutable purpose, the same infallible care, are evident. Nature is lavish but never wasteful and Sir Oliver justly urged that the knowledge of these things must be helpful in the uncertainty of man's brief existence.

MUSIC AS A THERAPEUTIC AGENT

There are many ways of gaining health or of improving one's health. In fact, at the present time, the various aids to health advocated in this direction are so many as to be almost embarrassing. For particular complaints and conditions, massage, electricity, x rays, radiant light, psychotherapy are recommended and the already overworked physician, as a rule, has not the time to learn how to apply such methods correctly.

Long ago music was vaunted for its beneficial properties in certain states of ill health. In history there is frequent mention of the healing powers of music especially in some phases of illbalanced mind.

Theophrastus and Democritus refer to valuable therapeutic properties of music, and in the Roman and in medieval Italian writings music is spoken of favorably, often as curative particularly for the relief of pain and for collapse after serpent bites. In more modern times, the uses of music and medicine have been discussed freely and at length and in a work brought out by Dr. Agnes Saville a chapter was devoted to the consideration of the remedial and curative properties of music.

The New Health Society *Bulletin,* in a recent issue, comments on the matter and it is pointed out that under modern and scientific methods of examination it is probable that many of the cases described as having been healed by music would be classed as belonging to the group of hysterical and other functional disorders, which readily respond to many methods of suggestion. However, even if this be the explanation, it does not detract from the value of the therapeutic agent, while pleasing music possesses decided advantages over some of the psychotherapeutic measures employed.

REPORT OF NEW YORK'S CHIEF MEDICAL EXAMINER

The total number of deaths in New York City during the year 1925 were 71,864. Of this number, 13,353 cases were handled by the office of the Chief Medical Examiner of New York City, according to a recently issued report of that official. This was an increase over the previous year of 765. The report covers vehicular accidents, homicides and suicides, asphyxiation by gas, and "natural" deaths, including sudden demise and those unattended by a physician or occurring under suspicious or unusual circumstances. These natural deaths numbered 6,692; the violent deaths 5,581.

Highway accidents were responsible in 1925 for 1,272. Of these, 589 were caused by pleasure cars, and 343 by commercial automobiles. The children and young people who lost their lives in this, numbered 462. Of these the largest number, 238, were between the ages of five and ten; ninety-seven were under five; eighty-two were between ten and fifteen; and forty-five between fifteen and twenty.

The next largest number of deaths came from suicides and amounted to 994. Illuminant gas was used by 388 of these, 145 hanged themselves, and 134 jumped from high places.

Alcoholism claimed the largest number of victims among general diseases, namely, 585. There were 356 homicides, of which 248 were caused by shooting and fifty-seven by stabbing. There were twelve cases of infanticide. Pulmonary tuberculosis caused 290 deaths; carcinoma, 123; elevator accidents eighty-seven, of which forty-seven were caused by falls into shafts, thirty-six persons were crushed by elevators, three were killed by the elevator's falling, and one fell into a dumbwaiter shaft; eighty-two deaths were caused by sepsis, forty-nine from diabetes, forty from tetanus, and twenty from diphtheria. It must of course be borne in mind when considering these statistics that they pertain only to cases handled in the Office of the Chief Medical Examiner of New York City.

Among miscellaneous casualties were eight deaths from diving, six from baseball, six from coasting, three from fist fights, and one from football.

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The Heart in Thyroid Disease

ERNST P. BOAS, M.D.

New York

Much has been written concerning the goitre heart, but a survey of the literature and of the text books reveals little uniformity of opinion and few clear concepts of the underlying pathological physiology. The goitre heart is found in simple, as well as in exophthalmic goitre, but the nature of the cardiac disturbance in the two conditions is quite different.

With simple goitre cardiac hypertrophy is usually constant and proportional to the size of the goitre. Marine (1) has demonstrated this in animals and believes that the cardiac enlargement is a work hypertrophy due to tremendously increased vascularity of the thyroid in the earlier stages of the goitre. The dilatation of the thyroid arteries and veins, which may include the larger branches connecting them with the aorta and superior vena cava, short circuit a large part of the blood flow, so that the heart must handle a larger volume of blood with each systole. The cardiac hypertrophy, therefore, is analogous to that described in certain arteriovenous aneurysms. Others, among them Rose (2), Minnich (3), and Blauel (4), have attributed the cardiac enlargement to an increased blood pressure in the pulmonary circulation brought on by the obstruction to respiration consequent upon compression of the trachea by a large nodular goitre, which is often followed by recurrent attacks of bronchitis, emphysema, and occasionally by bronchiectasis. In support of this theory, it has been pointed out that in these cases the right ventricle in particular shows hypertrophy and dilatation. Be that as it may, this can obtain only in a limited number of cases. Still others, following Kraus (5), believe that toxic influences are the determining factors. In many cases both toxic and mechanical moments seem to play a rôle.

There may be few symptoms referable to the heart in the mechanical form of goitre heart. Dyspnea due to tracheal compression, emphysema, and recurring attacks of bronchitis usually dominate the clinical picture. In time myocardial insufficiency and dilatation of the right heart, manifested by palpitation, dyspnea, congestion of the lungs and edema, set in. The patients with the socalled toxic goitre heart complain of palpitation and precordial pain. They may show tachycardia, slight tremor, sweating and dermographia. The heart is hypertrophied. Many patients with simple goitre exhibit combination forms of the mechanical and toxic goitre heart.

Whatever the etiological factor, the heart associated with long standing simple goitre in time may become insufficient, and signs of cardiac failure then dominate the clinical picture and eventually may lead to death.

The röntgen picture of the heart, associated with simple goitre, shows, as has been pointed out by Bauer and Helm (6), a prominence and exaggerated pulsation of the region of the pulmonary artery, with a narrow, high placed aorta. The transverse diameter of the heart is not much enlarged. They interpret this picture as an indication of a constitutionally hypoplastic heart.

TREATMENT

The cardiac disturbance associated with simple goitre is very resistant to ordinary cardiac therapy. Digitalis is usually without effect. When the socalled toxic symptoms predominate, relief may be expected from operative removal of the goitre. Indeed, the heart may recede in size after operation.

The heart in Graves's disease presents quite a different picture. Pathologically, one finds frequently moderate hypertrophy and dilatation of both ventricles, with fatty infiltration of the heart muscle cells (7). The anatomical changes in the heart muscle, however, rarely parallel the severity of the symptoms. In some cases small scars with interstitial or perivascular round cell infiltration are found scattered through the heart muscle. Similar lesions may be found in the hearts of patients with simple goitre (8). Several observers have experimentally produced similar lesions by feeding desiccated thyroid to animals (9, 10). Recently Goodpasture (10) has described two cases of Graves's disease with extensive myocardial necrosis, unaccompanied by inflammatory reaction or by coronary artery disease. He points out, however, that this is an uncommon finding. The cause of the cardiac disturbance remains obscure, although it is generally believed to depend on a toxemia. It has been suggested that pressure on the cardiac plexuses by a substernal

goitre may be responsible in some instances. Chiari (11) has pointed out that cardiovascular anomalies, such as the dropped heart and narrow fragile arteries, as well as vasomotor instability, frequently determine the intensity of the cardiac symptoms in Graves's disease. He recalls that functional heart symptoms may precede the onset of Graves's disease and may continue after the disease has become arrested.

The increased basal metabolism so constantly observed in Graves's disease and particularly the close correlation between pulse rate and basal metabolism (12) point to another factor which must affect the heart. With the heightened metabolism there is a greater consumption of oxygen by the tissues and an increased elimination of carbon dioxide. Since there is no change in the hemoglobin and red cell content of the blood nor in the oxygen saturation this necessitates an increased minute volume flow of blood through the tissues. This may be attained by an increased systolic output of the ventricles or by an accelerated heart rate or by both. These factors, acting continuously for twenty-four hours of the day for months at a time, must place a great strain on the heart and result in cardiac hypertrophy and dilatation, and probably make the heart more susceptible to toxic injuries (13).

Disorders of the cardiovascular system are among the most important symptoms of Graves's disease, and in no case, if it is of sufficient duration, do cardiac symptoms fail to appear eventually. A regular tachycardia, usually ranging between 100 and 140, which in severe cases may reach 200, is the most constant manifestation. The rate is not slowed by rest or during sleep, a feature which differentiates it from the functional tachycardias. Slight emotional stress results in a marked acceleration of the pulse rate.

The patients complain of palpitation, precordial pain, pulsations in the neck, head and epigastrium, as well as shortness of breath on exertion. Physical examination reveals an overactive heart, which may or may not be enlarged, with a diffuse strong apex beat. The first heart sound is often sharp and snapping and may simulate the one heard in mitral stenosis. A systolic murmur may be heard at the apex or base. The pulse is full and quick, resembling the pulse in aortic insufficiency. A systolic flushing of the skin may frequently be elicited. The systolic blood pressure is usually elevated while the diastolic pressure is normal or low. Characteristic is the lability of the systolic blood pressure. It varies as does the pulse rate, becoming elevated following physical or emotional stress. In certain cases the blood pressure is low, particularly in patients with marked asthenia, who are in the exhaustion state of the disease.

If the Graves syndrome does not last too long, the heart may be restored to normal. If the disease persists or becomes severe, the cardiac involvement becomes more serious and progressive. At first extrasystoles may appear. More characteristic, however, is auricular fibrillation, which occurs at first in paroxysms but later becomes continuous. Then signs of myocardial insufficiency and stasis in the peripheral circulation become manifest. Once the cardiac involvement has progressed to this stage, the damage is permanent and is not relieved by the arrest of the Graves disease, so that most of these patients die from cardiac failure.

In a recent series of 377 cases of Graves's disease reported from the Mayo Clinic (14), auricular fibrillation was found in 22.4 per cent. In a number of cases the fibrillation followed immediately on operative interference. In the whole series, which was studied electrocardiographically, other irregularities were very unusual. It is interesting to note that abnormal Q R S complexes and inverted T waves, both signs of myocardial disease, were observed in only two cases. A good review of the literature with an analysis of the cardiovascular symptoms in 141 cases studied at the Peter Bent Brigham Hospital has recently been published by Dameshek (15). Early arrest of the Graves syndrome by operation or other means will not infrequently lead to a restoration of normal cardiac rhythm (16). Even when the irregularity has existed for a long period of time sinus rhythm can usually be reestablished by the administration of quinidine, if the activity of the disease has been checked (17).

TREATMENT

Of greatest importance are general measures directed to the control of Graves's disease. In addition it may be necessary to employ specific measures for certain cardiovascular symptoms. In a severe case with an overactive heart, an ice bag to the precordium may be indicated. Digitalis or its derivatives are of no value in the control of the tachycardia before irregularity of rhythm sets in. In the milder cases, when the patient is up and about, exercise must be limited sufficiently to prevent the appearance of dyspnea. When auricular fibrillation and myocardial insufficiency appear, the treatment corresponds to that of ordinary heart disease. It is at this stage that digitalis proves of value. With auricular fibrillation sufficient digitalis should be administered to control the pulse deficit and to reduce the pulse rate to as close to 72 as possible. One must, however, guard against serious cerebral toxic effects of this drug, to which patients with Graves's disease seem to be particularly subject (18). The auricular fibrillation of exophthalmic goitre lends itself particularly well to successful treatment with quinidine hydrochloride.

In myxedema the heart is usually normal. However, Zondek (19) and Assmann (20) have described large hearts in myxedematous patients which rapidly receded in size following the administration of desiccated thyroid. The electrocardiogram of such a heart may show the P wave absent, and the T wave very small (19). Aftertreatment with desiccated thyroid the complexes again become normal. Burlage (21) has made similar observations on cretin sheep. The drug, however, must be given with great caution to these patients, for some of these badly damaged hearts are unable to meet the strain of a too sudden increase of the cellular metabolism of the body. In such cases it is well to start with doses of one half grain of thyroid gland twice a day. If this is well borne, larger doses may be employed (22).

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Resection of a Portion of the Axillary Artery*

FREDERICK W. CELCE, M.D.
Philadelphia

Because of its anatomical position the axillary artery is frequently injured and its involvement in neoplastic metastasis is not rare. Its proximity to the surgical field in operative procedures in the axilla seems to make the following case report worthy of presentation.

The axillary artery, the continuation of the subclavian, begins at the lower border of the first rib and has its termination at the lower border of the tendon of the teres major muscle, where it becomes the brachial artery. The line of the artery is straight only when the arm is out from the body; if the arm lies by the body, the artery describes a curve with its convexity outward; if the arm is abducted above the level of the shoulder, the artery curves with its convexity downward. The artery is divided into three parts by the pectoralis minor muscle. The branches of the various parts are 1, highest thoracic; 2, thoracoacromial and lateral thoracic; 3, subscapular, anterior and posterior humeral circumflex. The relations are well known. The axillary nodes are in three sets—one along the edge of the pectoralis major muscle (pectoral nodes) and other further back along the anterior edge of the scapula (scapular nodes) and a third following the course of the axillary artery (the humeral nodes). In our experience, those along the pectoralis major are most frequently involved.

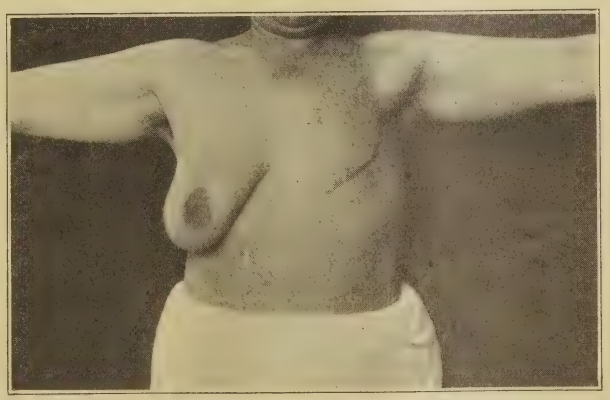

Fig. 1.—Case II. Mrs. B. M., operated upon on May 15, 1925, for carcinoma of the left breast with axillary metastasis. Resection of a portion of the axillary artery. Note symmetry of the arms. This photograph was taken one year after operation.

Injury and involvement of the axillary artery may be due to a number of diverse causes such as aneurysm, gun shot wounds, stab wounds, fractures and dislocations of the humerus, spontaneous rupture from trauma, neoplastic involvement and metastatic glandular involvement. There are many cases reported in the literature of ligation of the artery principally in its first and third portions by reason of aneurysm and traumatic injury. In a careful review of the literature only one case of resection of a portion of the artery came to my attention.

Case I.—This was the case of Private C. J. wounded August 17, 1917 by a rifle bullet. At a point immediately above the crossing of the inner head of the median nerve the artery presented a slight bulging and appeared to be bruised. It was pulsating below this point but on palpation the damaged portion of the wall of the vessel felt thin and a very slight weeping of blood occurred. The artery was ligated above and below and the damaged portion excised (three-quarter inch). There was also nerve damage not relevant here. The authors state "The patient made an uninterrupted recovery and was evacuated to England on August 31, 1917. There was already some return of power in the extensors of the wrist. We have since heard that he is making good recovery." This case and the cases which I will now report are but remotely comparable, as the resection was done in different portions of the artery and also as the former case had nerve damage while the following case had none.

Case II.—Mrs. B. M., white, aged forty, was admitted to the Lankenau Hospital, Philadelphia, Pennsylvania, May 15, 1925. She had an irregular mass in the left breast which she had noticed eight

*From the Department of Surgery of The Lankenau Hospital, Philadelphia, Pennsylvania.

months before admission. This had gradually been increasing in size but at no time was there pain in the breast or any discharge from the nipple. The weight of the patient had remained the same for the past five years. Upon examination the patient had a florid complexion, very foul breath, marked oral infection with pyorrhea and infected stumps of teeth. Her chest expansion was fair and equal. Lungs were clear. There was a large diffuse, hard mass in the upper outer portion of the left breast about the size of an orange. The skin was firmly adherent and was markedly thickened and retracted over this area. The mass itself was adherent to the underlying tissue. Definite axillary nodes were palpated on the left side. The blood pressure was 130-78. Carcinoma of the breast with metastasis was diagnosed and an operation was performed by Dr. John B. Deaver. The pectoral muscles were not removed but the fascia covering them was cut away cleanly. Metastatic carcinoma was found in the axillary glands, a mass on the subclavian vein being freed with difficulty. In dissecting the axilla, a mass firmly adherent to the axillary artery was found lying beneath the pectoralis minor muscle. The artery was ligated and one and one half inches cut away between ligatures. This showed definite metastasis into the wall. An uneventful recovery was made. There was no radial pulse at the left wrist after operation. The temperature after the first two days was normal and the arm remained warm being only one half of a degree colder than the right arm. There was no discoloration or swelling or pain at any time. Upon discharge on May 30, 1925 the patient had almost normal use of her arm and the x ray showed no metastasis to the lungs. Pathological report revealed carcinoma simplex with metastasis. Metastasis in a gland adjacent to the axillary artery invaded the wall of the artery. One year later on May 24, 1926 the patient was again seen in our followup clinic having had x ray therapy in the interim. Then a small palpable nodule under the thyroid muscles in the supra clavicular fossa was discovered. Function has never been impaired, nor, with the exception of the fact that there was no detectable radial pulse at the left wrist, was there any disturbance of circulation. The measurements taken at the time follow:

	Right Arm.	*Left Arm*
1. Half way between elbow and shoulder	26½ cms.	27 cms.
2. Half way between 1. and shoulder	29½ cms.	28 cms.

The collateral circulation established in this case is mainly by the free anastomosis of the subscapular artery with the transverse scapular and transverse cervical branches of the subclavian.

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Postinfluenzal Heartblock*

ALBERT S. HYMAN, M.D.
New York

Irregularities of the heart beat arising during the course of the severe infectious diseases (1) have been noted for many years (2) by clinicians. In such serious affections as diphtheria (3), typhus (4) and typhoid (5) fevers, certain types of pneumonia (6), and above all, acute rheumatic fever (7) irregularities of the pulse are discovered quite frequently.

Such irregularities when carefully studied by polygraphic or electrocardiographic methods tend to fall into three great general groups, the first and undoubtedly the most common of which are the premature beats or extrasystoles. The second group would include the gross perversions of the mechanism of the heart beat like auricular flutter or fibrillation. The third, and perhaps the least common because they are more difficult to distinguish clinically, is the group wherein there is depression of the conducting system resulting in heartblock of various degrees of severity.

Heartblock of the socalled first degree where the conduction time for the impulse to pass from the auricles to the ventricles is increased beyond the upper normal limit of 0.20 seconds (8) is sufficiently common in severe general infections as to deserve only passing notice. It is seen especially during the second and third weeks of a diphtheritic infection and the fourth and fifth weeks of a typhoid process.

Heartblock of the second degree, however, with actual dropping out of a complete ventricular systole is not so common and its detection has been considered evidence of serious myocardial damage and an indication for a guarded prognosis.

Recently attention has been directed toward the cardiac involvement following an influenzal infection

*From the Witkin Foundation for the Study and Prevention of Heart Disease at the Beth David Hospital, New York.

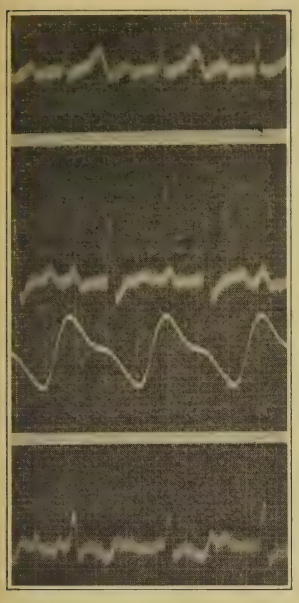

Fig. 1. — Electrocardiographic and polygraphic records taken on December 30, 1925. P-waves well formed and upright in all leads. P-R interval measures from 0.28 to 0.36 seconds. QRS-complexes slightly delayed in conduction time but upright in all leads. T-waves well formed and upright in Lead I; upright but somewhat "bowed" in Lead II; inverted in Lead III. Auricular-ventricular rate 100 beats per minute. First degree of heart-block with severe myocardial damage without disturbance of rhythm.

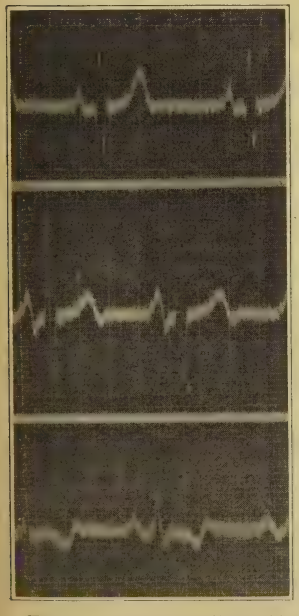

Fig. 2. — Electrocardiographic records taken on January 22, 1926. P-waves well formed and upright in all leads. P-R interval measures 0.20 seconds (the upper limit of normal conduction time); QRS-complexes not delayed and upright in all leads. T-waves well formed and upright in Leads I and II but still inverted in Lead III. Auricular-ventricular rate 68 beats per minute. First degree of heart-block essentially recovered; still residual myocardial damage.

and the observation made by many clinicians in the course of the cases occurring in the past winter and spring's mild epidemic of this disease has done much to include influenza among the group of infectious diseases which leave their imprint upon the heart. Undoubtedly the most striking observation which has been made in regard to the recent outbreak of influenza is that the severity of the actual infection itself is in no way comparable to the subsequent myocardial damage. If any generalization is to be made, most clinicians might be inclined to believe that the cases with the mildest apparent symptoms frequently suffered the greatest cardiac involvement; perhaps the converse of such a general statement would be more accurate in that the cases which showed the most severe cardiac complications ran a rather mild or almost negligible influenzal infection.

While such cases have not been uncommon in our experience, three may be selected in demonstrating certain interesting phases in the development of socalled postinfluenzal heartblock, a phrase which has appeared only recently and which we believe originated with Prof. J. Rehfisch of Berlin in whose clinic we were fortunate enough to see several such cases a few years ago. The cases selected for presentation here are chosen because the original influenzal attack was exceedingly mild while the subsequent myocardial damage was rather severe.

The following case is rather typical and illustrates the development of a first degree of heart-block with depression of the conducting system; such cases usually are accompanied by an associated myocardial involvement which may persist after the conduction disturbance has cleared up. In this particular case both the myocardial damage and conduction system depression were restored at about the same time.

Case I.—F. N., female, aged twenty-eight, married. Family and past history irrelevant. The patient was usually well and active. On December 10, 1925, she arose with a mild headache and a general feeling of malaise. During the day she had a slight fever (100.6° F.) and on the following day she complained of pains and aches throughout the arms and legs. By the evening of the third day she was practically well again and resumed her usual duties, although feeling somewhat weakened. Ten days later after climbing up two flights of stairs she was seized with cramplike pains in the precordium which were associated with extreme dyspnea. For the next few days she was especially heart conscious and when seen four days later she had had several fainting spells.

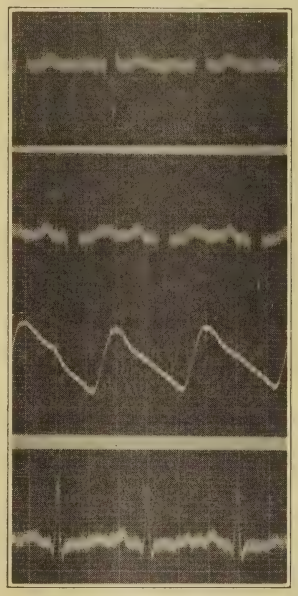

Fig. 3. — Electrocardiographic records taken on May 4, 1926. P-waves upright in all leads; P-R interval measures 0.18 seconds. QRS-complexes upright in all leads. T-waves upright in all leads though somewhat flattened in Lead III. Auricular-ventricular rate 100. Rather normal tracing.

A brief résumé of the cardiovascular study made on December 30th follows:

The patient was a well developed young woman at her normal weight. Under the Dressler white light she showed a suggestion of cyanosis of her mucous membranes. During the course of the examination she had a slight attack of dyspnea. To percussion the area of cardiac dullness was not increased. The apex impulse was located with difficulty in the fifth interspace just within the midclavicular line. It was neither heaving nor forcible. No thrills or shocks were felt. The heart sounds were clearly heard over the entire precordium; at the apex the first and second sounds had about the same tonal quality but at the base, the second pulmonic sound was accentuated over the second aortic. The sound of the valve closures was of good quality. The dominant rhythm of the heart was regular; the apical rate was 100. All of the apical beats were transmitted through to the radial artery. No sinus arrhythmia was detected but other vagal effects like the breath holding test of Rehfisch and the ocular cardiac reflex of Starling were positive. No murmurs were heard. The lungs were clear throughout; no MacKenzie râles were heard at either base posteriorly. Neither liver nor spleen was palpable and there was no free fluid in the abdomen. There was no edema of the lower extremities.

Blood pressure reactions with the Pachon oscillometer gave pulsations from the brachial artery as

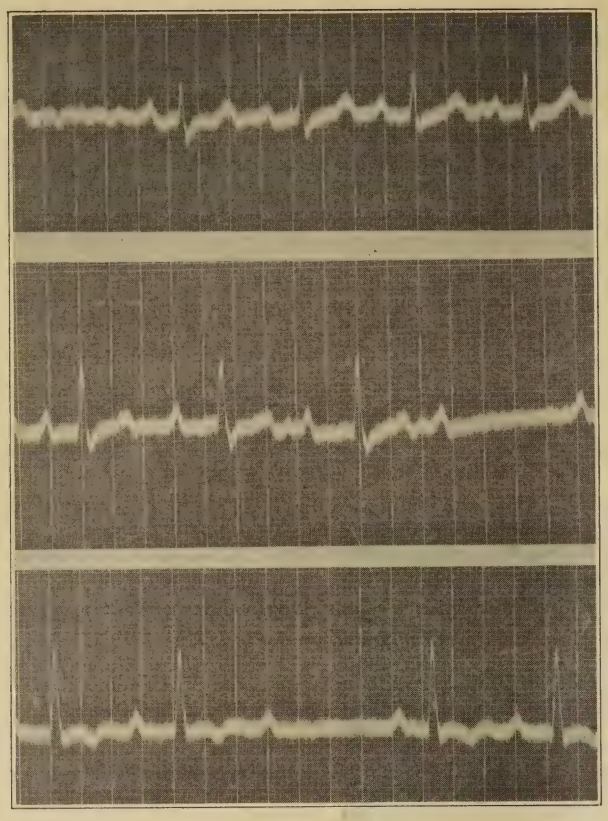

Fig. 4

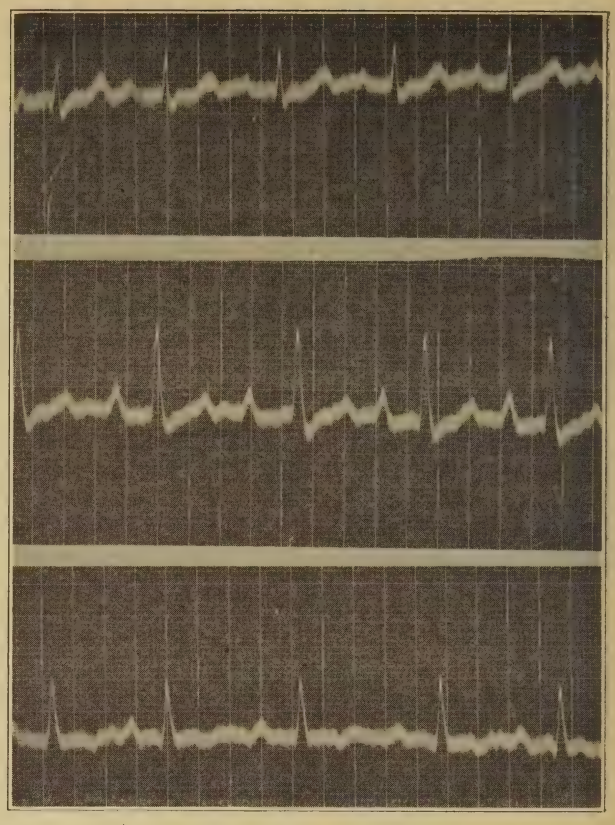

Fig. 5

Fig. 4.—Electrocardiographic records taken on June 6, 1926. P-waves well formed and upright in all leads. P-R interval varies from 0.40 to 0.28 seconds. QRS-complexes upright in all leads but delayed in transmission. Every fifth or sixth complex dropped out. T-waves well formed and upright in Lead I; upright but "bowed" in Lead II; inverted in Lead III. Second degree or partial heartblock with 5:4 and 6:5 rhythm. Severe myocardial damage.

Fig. 5.—Electrocardiographic records taken on June 9, 1926. P-waves well formed and upright in all leads. P-R interval varies from 0.36 to 0.24 seconds. QRS-complexes still delayed but upright; no complexes dropped out. T-waves well formed and upright in Leads I and II but still inverted in Lead III. Auricular-ventricular rate 76. First degree heartblock with severe myocardial damage.

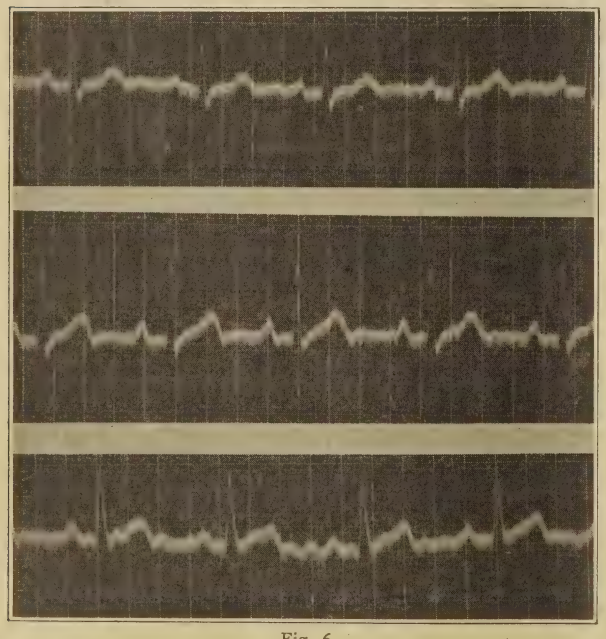

Fig. 6

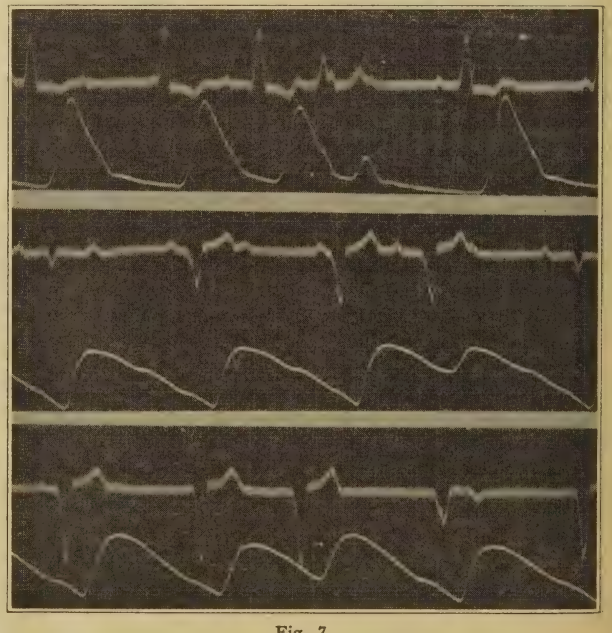

Fig. 7

Fig. 6.—Electrocardiographic records taken on June 20, 1926. P-waves well formed and upright in all leads. P-R interval measures from 0.22 to 0.18 seconds. QRS-complexes upright in all leads but still somewhat delayed in the third lead. T-waves well formed and upright in all leads. Auricular-ventricular rate is 78. Rather normal tracing.

Fig. 7.—Electrocardiographic and polygraphic records taken December 2, 1925. P-waves small but upright in all leads. P-R interval inconstant and often absent. QRS-complexes upright in Lead I but downward in Leads II and III; the complex is greatly delayed in transmission and it occurs in different sizes and bizarre forms. T-waves dominantly inverted in Lead I but upright in Leads II and III; after bizarre complexes it may reverse its isoelectric excursion (i. e., in the first lead it becomes upright and in the third it becomes inverted). The T-waves occasionally coalesce with the P-waves. Auricular rate is about 88 and the ventricular rate is about 40. Third degree or complete heartblock; absolute dissociation of auricles and ventricles with severe myocardial damage, probably also a right bundle branch block.

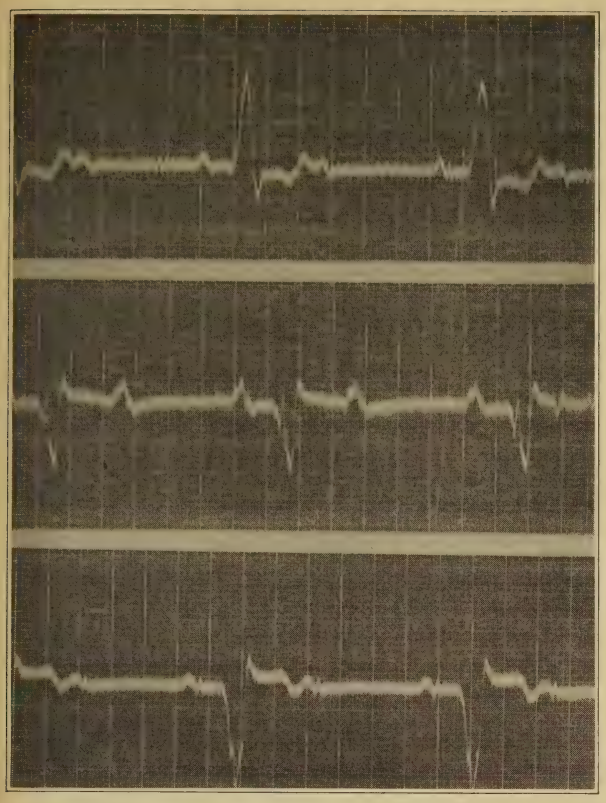

FIG. 8.—Electrocardiographic records taken on February 17, 1926. P-waves well formed and upright in all leads; every second P-wave coalesces with preceding T-wave; there are two P-waves for every QRS-complex. P-R interval measures 0.26 seconds and is practically constant. QRS-complexes greatly widened and delayed with aborization in the second and third leads. The complexes are upright in Lead I but downward in Leads II and III. The T-waves are di-phasic in Lead I and they coalesce with every other P-wave; in Leads II and III they are combined in a bizarre form with the QRS-complex. Auricular rate is 84 and the ventricular rate is 42. Second degree or partial heartblock with a 2:1 rhythm; first degree heartblock with a delayed P-R interval. Considerable myocardial damage. Right bundle branch block.

high as 130 and as low as 70 mm. of mercury. The curve presented was rather normal. Clinical blood pressure levels were established as systolic 124 and diastolic 78.

Vital capacity determinations showed a total expired tidal volume of 1800 c. c. Based upon her weight of 136 pounds this represented a reduction to fifty-five per cent. and based upon her height of sixty-two inches this represents a reduction to fifty-seven per cent. of her theoretical normal standard. (Myers tables.)

Fluoroscopic examination showed the heart to have a rather normal contour; the pulsations and movements of the ventricles and great vessels were normal. The lung fields were clear. The diaphragmatic excursions were equal and of good amplitude upon both sides. No pericardial diaphragmatic adhesions were seen.

Orthodiagraphic measurements showed the heart to be rather small for this age height group. The diagonal diameter of the heart measured 11.5 cm.; the right horizontal measured 3.5 cm. and the left 8.5 cm. The aortic arch measured 4.5 cm. across.

Electrocardiographic studies were interesting. The P-R interval representing the conduction time from the auricles to the ventricles measured from 0.28 to 0.36 seconds in duration; a first degree of heartblock.

Without the electrocardiographic studies the diagnosis in this case might have been impossible as there were no specific clinical signs of this type of heartblock, and for this reason we believe that many similar cases are missed.

The patient was treated rather conservatively with both theobromine sodium salicylate and theobromine calcium salicylate under the Parkinson theory that conduction is enhanced by coronary dilatation. Except for the general weakness which usually follows an influenzal infection the patient had no complaints; she remained in bed until January 16, 1926, and on January 22nd another electrocardiographic study was made.

Further electrocardiographic studies were made upon February 18th, March 30th, and April 21st, but it was not until May 4th that the conduction disturbance entirely disappeared and the time required for the impulse to pass from auricles to ventricles returned to its original normal time of 0.18 seconds.

This case illustrates rather emphatically how persistent the postinfluenzal condition may remain and more especially how severe the postinfluenzal condition may be when compared with the transient and almost evanescent character of the original attack itself. Although the patient had clinically recovered after a very few days, the cardiac affection remained for more than four months.

Such cases are not uncommon but they are usually undiagnosed as the severity of the disease does not warrant or even suggest an electrocardiographic study. In a series of nineteen cases of influenza studied, but not yet published, during the winter of 1925-26, nine were found to have a delayed conduc-

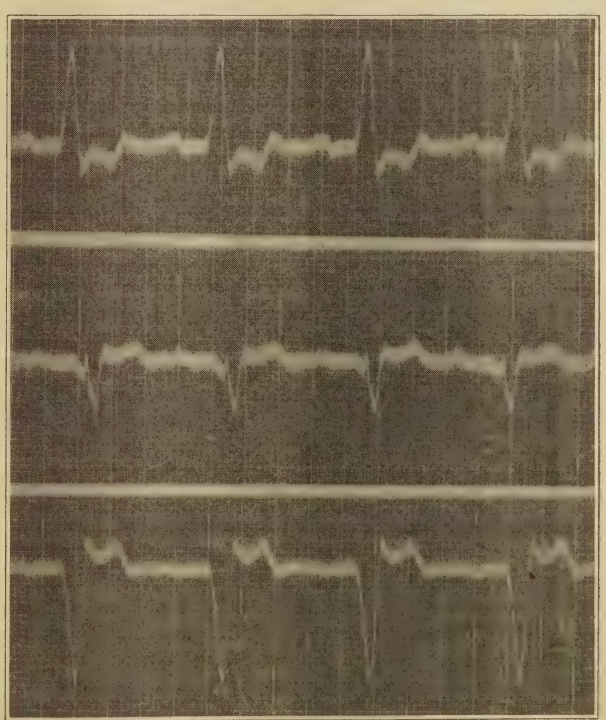

FIG. 9.—Electrocardiographic records taken on April 2, 1926. P-waves upright in Leads I and II but inverted in Lead III; they are not well formed except in the first lead. P-R interval measures 0.28 seconds and is constant. QRS-complexes still greatly delayed in transmission but no longer arborized in Leads II and III. T-waves are well formed in all leads; they are inverted in Lead I but upright in Leads II and III. The auricular-ventricular rate is 66. First degree of heartblock; considerable myocardial damage. Right bundle branch block.

tion time. If this ratio holds good for all influenzal infections, it would appear that a first degree of heartblock is quite common as a sequela to such infections and that the influenza toxin, whatever it may be, may render as much damage to the myocardium as the other better known infectious diseases previously discussed.

Heartblock of the second degree is characterized by rather regular intermissions in the apical beat with a rhythmic jugular pulsation; it can thus be readily distinguished at the bedside from extra systoles and other irregularities of the heart beat. The theories developed to explain the mechanism of the intermission or dropping out of a ventricular beat are manifold (9) (10). Very recently Ashmann and Herrmann (11) have described a recovery curve in the conducting system which brings much new light upon the problem, which though it may appear entirely academic to the general practitioner of medicine, is nevertheless of extreme importance in prognosis (12).

Suffice it here to note that in general heartblock of the second degree is a further and more advanced process than mere delay in conduction from the auricles to the ventricles as in a first degree of conduction depression. The intermissions call attention to the pulse rate in a case which has hitherto shown no unusual cardiac signs. The intermissions may occur in any of several ratios; the most common clinically are 2:1 (i. e., two auricular beats to one ventricular beat), 3:2, 4:3, 5:4 and 6:5. In the following case the ratio varied from 5:4 to 6:5.

Case II.—E. M., female, aged eighteen. Past history of frequent attacks of tonsillitis and sore throats nearly every winter; scarlet fever at the age of eight. Otherwise usually well and attended school regularly. On June 3, 1926, she returned from school complaining of headache and general malaise; she vomited several times and had a temperature of 102.8° that evening. For the next two days she showed a typical influenzal syndrome with the temperature gradually falling to 99.8°. At this time the pulse which had been about 94 suddenly became irregular, so that only 66 to 72 was felt at the wrist.

A physical examination at this time showed a rather well developed young girl with a pallid face but without cyanosis of any kind. To percussion the area of cardiac dullness was not increased; the apex impulse was located in the fifth interspace within the midclavicular line. It was somewhat forcible. The heart sounds were clearly heard over the entire precordium; at the apex the second sound was accentuated over the first and at the base the second aortic had about the same intensity as the second pulmonic. All of the heart sounds had good tonal quality. The dominant rhythm of the heart was regular except for intermissions which occurred every fifth or sixth beat; during the intermission the jugular pulsation was regular. All of the apical beats were transmitted through to the radial artery; the apical rate varied from 66 to 78. After exertion or slight exercise the ratio would change to 10:9, 16:15 and finally a regular pulse would develop and would persist for about four minutes when again the intermissions would recur. The apical rate after such an exercise test would vary from 96 to 110. No murmurs were heard.

The lungs were essentially clear throughout; no MacKenzie râles were heard at either base posteriorly. Neither the liver nor the spleen could be palpated and there was no edema of the lower extremities.

Blood pressure was 126/72. Laboratory reports showed a negative urine; a white blood count of 9,400 with 81 per cent. polymorphonuclears; a red blood count of 4,200,000 with 82 per cent. hemoglobin.

An electrocardiographic study made on June 6, 1926, showed a well marked first and second degree of heartblock with a 5:4 and a 6:5 rhythm.

No medication of any kind was given in this case in order to determine what the natural process of recovery might be. The patient was kept quietly in bed on a rather bland diet of about 1500 calories a day.

On June 9th, it was noted that the pulse had become regular again with a rate varying at the wrist from 74 to 80. An exercise test raised the pulse rate to 128 and it continued to remain regular after the pulse has fallen to 76 beats again. A second electrocardiographic study was then made which showed a restoration of normal auricular ventricular rhythm although a first degree of heartblock persisted with a prolonged P-R interval.

From an ordinary clinical point of view the patient had entirely recovered and she was with great difficulty persuaded to remain under observation until the myocardial damage had disappeared and a normal electrocardiographic tracing obtained. Several studies were made on alternate days until on June 20th, seventeen days after the original onset of the influenzal attack, the P-R interval returned to within normal time limits.

The patient was discharged with advice to restrict her activities for some time to come as her tracings are not yet entirely normal, there remaining a variable P-R interval as well as some widening of the QRS complex.

The case presented illustrates again the unusual severity of the postinfluenzal cardiac involvement compared to the original attack of the infection and the long period of time required for the healing of damaged heart tissue.

The third case[1] is selected to demonstrate the effect of an influenzal infection upon an already damaged myocardium; the patient in 1924 had been diagnosed as a "chronic degenerative myocarditis with hypertension."

Case III.—P. P. S., male, aged sixty-three, widower, seen first on December 1, 1926. He had had a headache, some coryza, and a slight temperature for two days. He presented the familiar picture of an acute influenza which he had apparently acquired from two other members of the family who were also sick. The patient was a rather robust individual for his age; he had a definite cyanosis of his mucous membranes and he became dyspneic on very slight exertion.

To percussion the area of cardiac dullness was much increased toward the left beyond the midclavicular line. The apex impulse was rather feeble and could be located about two fingers outside the midclavicular line. The heart sounds were heard

[1]This case was presented before the Clinical Society of the Beth David Hospital on January 11th, 1926.

with difficulty; at the apex the second sound was much louder than the first and at the base the aortic second was definitely much accentuated over the second pulmonic; the sound of the valve closures was not of good quality. The rhythm of the heart was very irregular; large and small beats were heard in no regular order. The apical rate was about 46 but not all of the apical beats were transmitted through to the radial artery; the pulse deficit varied from 4 to 12. By bending the head in a certain position the great veins of the neck could be readily seen; it was noted that there were about 88 jugular pulsations a minute but that these pulsations were not related in time to the carotid pulsations or the apical beat of the heart. No vagal effects could be obtained. There was a rather loud blowing systolic murmur heard best at the apex but transmitted laterally toward the axilla.

The lungs were full of coarse moist râles and emphysematous sounds. The liver edge was just palpable but the spleen could not be felt. No free fluid could be demonstrated in the abdominal cavity. There was a slight pitting edema of the lower extremities.

Blood pressure reactions with the Pachon oscillometer gave pulsations from the brachial artery as high as 230 and as low as 70 mm. of mercury. The curve described suggested a central resistance to the arterial system. Clinical blood pressure levels were established as systolic 208, diastolic 86.

Vital capacity determinations showed a total expired tidal volume of 2100 c. c. Based upon the patient's weight of 178 pounds this represents a retduction to forty-three per cent. and based upon his height of forty-six inches this is a reduction of fifty-two per cent. of his theoretical standard (Myers tables).

Fluoroscopic examination showed the heart to be considerably enlarged with an aortic configuration; the pulsations and movements of the ventricles and great vessels were quite irregular. The lung fields were somewhat clouded throughout; the diaphragmatic excursions were normal but of poor amplitude on both sides; no adhesions were noted.

Orthodiagraphic measurements showed that both the heart and the aorta were enlarged; the diagonal diameter of the heart measured 16.4 cm.; the right horizontal diameter of the heart measured 6.8 and the left 11.8 cm. The aortic arch measured 10.4 cm.

From the clinical examination, the cardiodiagnosis was somewhat difficult; extrasystoles, partial heartblock, and complete dissociation of the auricular and ventricular rhythms had to be considered. The electrocardiographic studies in this case were quite essential for an understanding of the condition. The first record was made on December 2, 1925.

The severity of the myocardial damage made any therapeutic test inadvisable. Such gross perversions of the mechanism of the heart beat respond poorly to the usual methods of treatment. Adrenalin has been used more or less successfully by Parkinson at the National Heart Hospital in London and the author had an opportunity to watch three such cases under treatment at this institution in 1924. Meyer (13) believes that atropine gives more permanent relief than adrenalin; recently barium chloride has been used with promising results (14).

Sir James MacKenzie at one of his last appearances in London in 1924 told the author that he believed alcohol to be of considerable value in most conduction system disorders; in spite of the controversial opinion in regard to alcohol now in vogue, the patient was given small amounts of whiskey three or four times a day over several weeks with a gradual but not continuous improvement in the cardiac rhythm.

On February 14th, for the first time in about ten weeks, the radial pulse became regular with a rate of 42. The jugular pulsations could easily be counted at 86. A second electrocardiographic study was made on February 17th.

The patient was then permitted to become somewhat more active and theobromine calcium salicylate was administered in daily doses of twenty-one grains. The slow pulse persisted even after exercise of a moderate kind but when seen again on March 26th the pulse rate had increased to 66 beats per minute; there was no pulse deficit and all of the jugular pulsations coincided with the apex beat.

A third electrocardiographic study was made on April 2nd.

Although still presenting gross myocardial damage and with the right bundle branch block still persisting the final cardiac picture is infinitely better than that following the influenzal infection. This case is remarkable in suggesting the successive steps through which the myocardium and conduction system passes when recovering from massive damage. It also demonstrates rather nicely the development of the various grades and types of conduction system depression.

The slow recovery, here about four months after the original attack, once more emphasizes how out of proportion the original infection may be compared to the subsequent extent of the myocardial damage sustained.

SUMMARY

1. Three cases of heartblock demonstrating the various degrees of conduction system depression subsequent to mild attacks of influenza are presented.

2. Heartblock of the first degree with delay in the conduction time from the auricles to the ventricles is seen not infrequently accompanying or following the severe acute infectious diseases of which group influenza must be considered as having a place.

3. Heartblock of the second degree with intermission of the pulse because of dropped beats may follow a mild attack of influenza.

4. Heartblock of the third degree with complete dissociation of the auricles and ventricles may occur in an already badly damaged heart as a result of an influenzal infection.

5. Myocardial damage subsequent to influenzal infection bears no relation to the severity of the original attack; in our experience, the mild or skipped cases have shown the most severe cardiac complications.

6. Electrocardiographic studies of all cases suspected of having myocardial involvement following influenzal infections is suggested.

7. Influenza is to be grouped among other acute infections which leave their imprint indelibly upon the heart muscle and conducting mechanism.

The author's references will appear in his reprints.

The Treatment of Hypertension

ROBERT HUGH ROSE, M.D.
New York

In many cases of hypertension the diastolic blood pressure may be reduced an average of fifty per cent. of its advance above 80 and the systolic about fifty per cent. of its advance above 120 mm., i. e., a diastolic of 110 can be reduced to 90, approximately; a systolic of 200 can be reduced to 160, approximately. After reduction the pressure can generally be maintained at the lower point. This does not refer to patients in a terminal stage of Bright's disease or other equally serious conditions. It does, however, include some patients apparently in a very bad way and it also includes some cases of extremely high pressures—as high as 250 or more, systolic.

These statements are based entirely upon personal experience. The patients were mostly overweight. Many of them were middleaged, but they include a few older patients, some even above seventy. The literature on hypertension is pessimistic. Much of it deals with hospital cases altogether. The treatment generally described consists of medicine to act on the arteries and does not reach the cause. Treatment which I have used consists of diet, internal secretions, and attention to focal infections including the gastrointestinal tract.

Occasionally the literature contains statements which corroborate the conclusions of this paper. Dr. A. H. Terry, Jr. (1), referring to a group of obese patients treated in the outpatient department of the Presbyterian Hospital, said: "The majority of fat women who seek medical attention have hypertension. The hypertension is usually without findings suggestive of nephritis, diabetes or syphilis. On a high protein, low calory diet there is a lowering of weight, together with a lowering of blood pressure and this frequently relieves the chief complaints."

Dr. Eugene Lyman Fisk (2), in an analysis of 17,000 cases examined under the auspices of the Life Extension Institute, while he found no preponderance of hypertension among smokers or those on a high protein diet, did find, in a group of 2,145 overweight patients, hypertension in 14.9 per cent., contrasted with only six per cent. in a group of persons of normal weight. He says, "It is not at all uncommon to find a fall in blood pressure one millimetre per pound as the weight comes down by diet and exercise." Dr. Fisk (3), in collaboration with Louis I. Dublin and Edwin W. Kopf, found that in the ages of forty-five to fifty-four those persons twenty per cent. or more above normal weight showed, as compared with those of normal weight, approximately two and one half times as many with systolic blood pressure 20 to 60 mm. above normal and five times as many with 60 or more mm. above normal.

Hypertension is a symptom. Its cause should be found and treated just as is done with the symptom fever. Overweight, or the diet which produces overweight, would seem to be a cause in many cases and should, therefore, be treated. The chief contraindication to the reduction of high blood pressure is thickened narrowed arteries with signs of failing circulation. Here hypertension is the lesser of two evils. If reduced it might hasten a stroke or impair the circulation in an extremity.

The first observation of the writer on the dietetic treatment here outlined was made while reducing weight for a very stout patient. Thereafter the point was followed up and it was found to be the rule that reducing weight also reduced blood pressure. As the general condition of the patient was at the same time improved it was used for patients with the slightest amount of excess adipose tissue. No vasodilators were used. Results have remained up to seven years, i. e., as long as these cases have been under observation. Only those patients with distinct organic lesions failed to respond.

Case I.—Mrs. R. G., aged forty-five, first seen on February 23, 1926. She complained of headaches, swelling of the hands, pain in the knees, wrists and shoulders, shortness of breath, rushing sound in the ears, hot flashes and insomnia. She had not been well for six years and had spent ten months in bed—three weeks of which were in a hospital. According to her statement her blood pressure at one time ran from 280 to 300. On examination the patient's pulse was found to be 108, and her blood pressure, diastolic 110, systolic 232 to 238. The skin was very dry; hair dry and harsh; weight 146 pounds; a large proportion of the weight was carried about the trunk and waist.

This patient was placed upon a treatment combining a use of diet with glandular products. Injections of corpora lutea and thyroid tablets were administered. A cathartic containing bile salts was used with occasional doses of epsom salts. During this treatment a weight reduction diet was followed. This consisted chiefly of milk, coarse, green vegetables, and fruit.

March 1st: The patient showed the following record: Pulse 96; blood pressure, diastolic 104, systolic 212 to 218; weight 141 pounds.

March 6th: Pulse 84, blood pressure, diastolic 106, systolic 190; weight 138 pounds 12 ounces. The same treatment was continued with the exception that she was given ovarian instead of thyroid tablets. This was done because the insomnia, though somewhat relieved, was not entirely gone.

March 20th: Pulse 72, blood pressure, diastolic 96, systolic 168; weight 136 pounds 4 ounces. The patient was sleeping better. The tablets were changed back to thyroid. Many of the symptoms were by this time relieved; including the pain in the joints, shortness of breath, swelling of the hands, headaches and to some extent the head noises and insomnia.

September 20th: The examination was as follows: Pulse 78, blood pressure, diastolic 96, systolic 170; weight 130 pounds. Some of the noises in the head, insomnia and some pain over the cardiac area had been complained of during recent visits. An x ray of the teeth shows apical abscesses and extractions were ordered.

Result: In twenty-five days the pulse was reduced

from 108 to 72; diastolic pressure from 110 to 96; systolic pressure from 238 to 168 and weight from 146 to 136 pounds. Six months later the pulse was 78; diastolic 96; systolic 170; weight 130.

CASE II.—Mrs. E. T., aged fifty-five years; first seen April 20, 1926. The patient complained of dyspnea; palpitation; pulsation in the neck; nervousness; pain in the finger joints; high blood pressure had been discovered. On examination the patient showed the following: Pulse 84, blood pressure, diastolic 150, systolic 240; weight 150 pounds. Urine was negative for albumin, sugar and indican; specific gravity 1010; pus was pressed from tonsils; marked pulsation was visible in the arteries of the neck.

The following treatment was instituted: Injections of corpora lutea and tablets of ovarian substance; throat gargled with iodine solution. Diet was prescribed consisting of bacillus acidophilus milk, coarse vegetables and one potato daily.

April 23rd: Pulse 80; blood pressure, diastolic 120, systolic 210 to 214; weight 149 pounds 8 ounces.

April 28th: Pulse 80; blood pressure, diastolic 120, systolic 200; weight 148 pounds 11 ounces.

April 30th: Pulse 76; blood pressure, diastolic 116, systolic 188; weight 148 pounds.

May 18th: Pulse 72; blood pressure, diastolic 100, systolic 160; weight 145 pounds 12 ounces. Tablets were changed to thyroid. All symptoms were marked relieved, including buzzing in the ears and shortness of breath.

August 11th: Pulse 84; blood pressure, diastolic 112, systolic 168; weight 148 pounds 12 ounces. This reading was made after the patient had not been seen for two months. Previous treatment was again instituted.

Result: In four weeks, diastolic pressure was reduced from 150 to 112, systolic from 240 to 160; weight from 150 to 145 pounds 12 ounces.

The following case is presented because of the remarkable effect of diet and cathartics upon what seemed to be a very serious heart condition. This is a case of cardiac incompensation. It corresponds to what Dr. Arthur R. Elliott (4) describes as high blood pressure stasis. At first the heart is able to keep up a high pressure but as it comes to a time when it is embarrassed thereby, a degree of stasis is developed in the bloodvessels.

CASE III.—Mrs. H. A. G., aged seventy, first seen May 27, 1922. She gave a history of dyspnea on exertion for two years. At the time of the first visit she was unable to lie down because of dyspnea, being compelled to sleep sitting in a chair, and could not walk without embarrassed breathing. She complained of pain in the back of the head. Pulse was so irregular that it suggested fibrillation. Blood pressure, systolic 220. The abdomen was greatly distended with gas. Meat had been withheld from the diet for over a year because of the blood pressure.

The patient was placed on a diet consisting of milk, three to four glasses daily, fruit, green and coarse vegetables. A laxative of bile salts with cascara was used frequently until the abdominal distention was under control. In two weeks' time the pulse had dropped to 72; was much less irregular, and the systolic blood pressure was 210. The patient felt much better; was able to walk four blocks, and could sleep lying down. Her weight was then 153 pounds eight ounces, having dropped from 160 pounds.

Two and a half weeks later, on June 28th, her blood pressure was, diastolic 104, systolic 190; weight 146 pounds. Diet was limited to fruit, milk, green and coarse vegetables. At this time salt was also excluded. She was comfortable and able to walk a considerable amount. Improvement continued and on July 9th, pulse was 60; blood pressure, diastolic 98, systolic 166; weight 143 pounds. The patient was able to walk twenty blocks without difficulty; seemed entirely recovered and in excellent condition for one seventy years of age. A short time thereafter she was able to walk up hills with ease. Diet advised as follows: One pint of milk daily; meat once a day —small helping; egg occasionally; fruit; coarse and green vegetables. Heavy starches and fats limited to quantity sufficient for maintenance of weight. On July 7, 1924, I received a letter stating that the patient had done well except once or twice when she had given up the diet.

Result: In two months weight was reduced from 160 to 143 pounds; diastolic from 115 to 98; systolic from 220 to 166; pulse from rapid, irregular, to 60 and regular. This patient was a woman seventy years of age and she was well when last heard from in 1925.

I have selected five cases and arranged a table showing the reduction in pulse, diastolic blood pressure, systolic and weight. The average reductions were as follows: pulse 25; diastolic 22, systolic 66; weight 11 pounds.

A table of thirty-five cases was also arranged. This showed the following average reductions: pulse 17; diastolic pressure 20; systolic 39; weight 16 pounds.

The treatment was according to the following plan: The patients were placed upon a weight reduction diet until results were obtained. Then the diet was increased until weight was just maintained. Cathartics were used rather freely. Focal infections were treated. Preference was given to diet unless it was considered that focal infection was causing marked absorption. Many of these cases received internal secretions. Latterly, evidence of the need of internal secretions was searched for and they were used when indicated. Ovarian, thyroid and liver products were found most useful.

FIVE CASES WITH RECORD OF PULSE, BLOOD PRESSURE AND WEIGHT

	Age	*Date*	*P*	*D*	*S*	*Wgt.*	*Date*	*P*	*D*	*S*	
1	60	Sept. '22	116	100	224	156	Sept. '26	84	90	150	132[6]
2	50	Feb. '19	96	110	230	150	July '26	84	90	170	160
3	70	May '22	Rap & Irreg.	115	220	159	Sept. '22	72	94	180	137
4	45	Feb. '26	108	110	238	146	Oct. '26	68	100	160	129[6]
5	55	Apr. '26	84	150	240	150	May '26	72	100	160	145[12]
Total	280		404	585	1152	761		380	474	820	704
Average	56		101	117	230	152		76	95	164	141
Average reduction								25	22	66	11

P=pulse. D=diastolic blood pressure. S=systolic pressure.

AVERAGES BEFORE AND AFTER TREATMENT IN THIRTY-FIVE CASES

	P	*D*	*S*	*W*	*Duration of Treatment*	*P*	*D*	*S*	*Weight*
Average	94	109	190	182	9 days to 7 years	77	89	151	166 lbs.
Average reduction					.....	17	20	39	16
Greatest reduction					.....	..	..	80	..
Smallest reduction					.....	..	..	14	..

CONCLUSIONS

1. The writer's experience, confirmed from other sources, shows that weight reduction is accompanied, as a rule, by blood pressure reduction.

2. About fifteen per cent. of persons overweight have high blood pressure, according to Life Extension Institute records.

3. In thirty-five cases, the average reduction of diastolic was 20, systolic 39; pulse 17 and weight 16 pounds.

4. Average reduction of blood pressure is approximately fifty per cent. of the increase above normal.

5. Results are best in cases of recent development.

6. Symptoms of dyspnea, palpitation, pulsation in the ears and headaches are relieved. Beginning cardiac incompensation is benefited.

7. No claim is made for reduction of high blood pressure in cases accompanying Bright's disease, although in some cases albuminuria due to congestion of the kidneys disappears.

8. Treatment consisted of weight reduction diet, internal secretions and cathartics and attention to focal infections.

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30 EAST FORTIETH STREET.

A Consideration of Blood Pressure

ELLICE McDONALD, M.D.
Philadelphia, Pa.

In all studies of blood pressure there has been consideration of only two kinds, higher or lower than normal. As a result of this, the blood pressure estimation has not been of full use to the medical profession because of the impossibility of translating it into terms of vital processes. If any clinical test cannot be translated into terms of vital processes, its value is *nil*.

Blood pressure is an expression of energy or force, of which the human energy machine is the apparatus for production or modification, exactly as a motor modifies the gasoline fuel into energy. Blood pressure, being then an estimation of energy, there must be the two factors which are always present in any energy estimation, the quantity factor and the intensity factor. If water passes through a hose, its flow depends upon the size of the hose and the pressure. If the hose is bigger, the flow is with less pressure and any modification is possible with alteration in these two factors.

With blood pressure there is possible any of the following four deviations from normal:

	BLOOD PRESSURE				
Class.....	I	II	III	IV	
Quantity	+	+	—	—	Heart and blood flow
Intensity.....	+	—	+	—	Vessels and capillaries

In this scheme the heart capacity and blood flow mostly determine the quantity and the tone of the vessels and capillaries, and the resistance of the tissues mostly determine the intensity. These four classes of blood pressure deviation are each different from the other and classes number two and number three are by no means the same.

It is possible to recognize these variations clinically. Class I, with both factors plus, is a type in the high blood pressure of socalled essential hypertension with associated albumin and granular casts in the urine. This class in such cases is associated in my experience with a p.H. of the blood plasma upon the alkaline side of p.H. 7.38. There is generally a full red blood cell count and a rather increased percentage of polymorphonuclear leucocytes. Generally this type seems to be associated with an increased nonprotein nitrogen, although I have not been able to correlate completely the nonprotein nitrogen with the p.H. and the increased blood pressure. The socalled blood chemistry in my hands has been difficult to correlate with vital conditions and this is, I believe, due to the fact that most of such socalled blood chemistry does not take into consideration the fact that the blood is a heterogeneous system where the cells exist as particles in a liquid medium, and the important factors are the potential differences and ionic interchange across the cell surface. It is for this reason that the hydrogen ion estimation of the blood plasma is of such importance and use. It is to me the most valuable test in medicine.

A second limitation to socalled blood chemistry is the fact that the normal balance of the blood plasma is not at p.H. 7., or neutrality, but lies somewhere between the univalent substances and the bivalent and trivalent substances and anions. Sodium and potassium, univalent substances, produce alkalinity, but calcium and magnesium, bivalent substances, produce acidity. The acid cells exist in the alkaline medium and the important facts are the potential differences and tonic interchange.

Again in the cell and the plasma of blood, the chemical ingredients are unevenly distributed. There is about thirteen times as much calcium in the cell as there is outside it, and there is very much more sodium in the plasma than in the cell and so it is with the other ingredients. For this reason the socalled blood chemistry of whole blood gives very little information as distribution and ionization are more important than total amounts.

The high blood pressure of Class I is essentially a preponderance of the sympathetic side of the vegetative nervous system (the epinephrine experimental type) and is in my experience associated with a p.H. of the blood plasma upon the alkaline side of normal. For this reason, as it is an expression of the alkalinity mostly associated with the monovalent substances, it is benefitted by the salt free (sodium free) diet and by the addition of calcium to produce a normal p.H. In addition such acids as hydrochloric acid, phos-

phoric acid and ammonium chloride (which releases HCl and urea) seem to be of use. Various kinds of calcium salts have been tried; the present one most popular with me is a colloidal calcium, although the lactate and formate are also useful. Iodine in very small doses (or thyroxin in very small doses) is of value. In my hands, after an experimental trial of three different preparations, liver extracts alone gave very disappointing results. Liver extracts apparently are sometimes a mild vagus stimulant, and there are many other vagus stimulants, and the fact that its constitution is so inexact, does not incline me to try it again.

In the diet, it should be remembered that bread contains considerable sodium. In my opinion, most of the evils of meat in these cases result from the salt (sodium) eaten with it. There is no effort on my part to completely eliminate meat from the diet. The vitamine A substances without sodium, with elimination of sodium laxatives, is the basis of advice as to diet.

In the study of these cases of Class I (the sympathetic preponderant type of blood pressure), the diastolic pressure is of considerable value in watching the course. A rising diastolic pressure is significant even before any change in the systolic pressure.

Moot's rule: pulse pressure÷diastolic pressure=0.5 where this figure represents the normal, is of value in this Class I and in Class IV, but it is of less value in Classes II and III. This rule is of great value in estimating the resistance before a projected surgical operation or some such effort. Class I is so often the type of blood pressure associated with age, as age, in my experience is so often associated with a p.H. on the alkaline side.

Class IV is the low blood pressure of preponderance of the vagus side of the vegetative nervous system and is commonly associated with a p.H. upon the acid side of p.H.=7.35. A type of it is the low blood pressure of the asthmatic with an acid (less alkaline) p.H. It is so often associated with cardiac inhibition from excess of vagus influence.

Unduly low blood pressure is, in my opinion, quite as important an evil as high blood pressure. We are more apt to stress the high blood pressure because it is a frequent concomitant of a terminal alkaline age condition. Unduly low blood pressure is more frequent in the adult age, and more difficult to benefit.

Blood pressure balance is an evidence of vital equilibrium and life itself is an equilibrium. This equilibrium depends upon chemical forces. The constant body temperature in health is an example of this equilibrium produced by foregoing chemical forces. Disease is a deviation from this equilibrium and predisease deviations must come before disease, the terminal result, ensues. For this reason the equilibrium of blood pressure is important as an index of vital conditions and a low blood pressure is equally a manifestation of disturbance as a high one. The value of blood pressure manifestations is enhanced by correlation with other tests of vital activity such as the hydrogen ion concentration of the blood plasma, the urine examination, etc. Estimation of heart output or capacity would be of great value if accurate, but there seems to be doubt as to the accuracy of all methods of measuring the heart capacity.

Class II is a condition frequently seen in fatigue states and Class III is exemplified by aortic regurgitation with Corrigan's pulse. Class III frequently has swings over to the high side and it may be that this is one method of the production of cerebral hemorrhage—the simple bursting of the vessel does not explain the change. Westphal and Bar (1, 2), in a study of sixteen cases of apoplexy (mostly from hemorrhage) believe that the primary condition is an angiospastic spasm and that the restitution of the blood flow entails the hemorrhage which is coincident with a paroxysm of higher blood pressure. The local anemia from the arterial spasm is, they believe, the predisposing cause and they found lesions in the bloodvessels amounting sometimes to necrosis.

The hemorrhage from the cerebral vessel may be described as a primary alteration in the vessel wall as a result of colloid cell change which causes such changes in the vessel cell wall lattice as to allow diapedesis of blood cells and other colloid produced with increasing blood pressure. This is a possible explanation of such cerebral hemorrhages as occur in Class III with relatively low blood pressure but with swings toward the higher side and often with very high paroxysms.

A very interesting explanation of the blood pressure function, and one that coincides somewhat with that given here, is by Lenaz (3) who regards blood pressure as a function of the water content of the blood and that this is an equilibrium between the colloidal pressure of the blood plasma and the hydrodynamic pressure of the capillaries. He uses red blood cell count (per c.mm.) as an indicator of the water content of the blood: with a rise in capillary pressure the blood becomes thicker. He established a ratio between the blood pressure in mm. and the red blood cell count per c.mm.

This explanation is interesting, but not complete. Any explanation of blood pressure must be able to satisfy the mechanism of the following: (1) heart force; (2) heart capacity; (3) capillary pressure; (4) amount of blood; (5) colloidal water of cells of vessels as well as of blood; (6) hydremia or water dilution of blood as distinct from colloidal water; (7) colloidal aggregation or dispersion of the blood proteins. In such a consideration must be correlated the influence of the sympathetic and vagus side of the vegetative nervous system and the influence of the change of the inorganic substances in producing alteration in the colloids and colloid cells. In such a study, there remains the fundamental fact that blood pressure as an expression of force or energy, capable of measurement, must have two factors, that of quantity and that of intensity. These two factors must be considered in any study of force or energy, and it is to be hoped that a consideration of them will aid in the study of blood pressure, and this study, to be worth while, must be correlated with the vegetative nervous system and with colloidal changes in the blood and in the body. In this way only will such a study be of value and knowledge be gained of the equilibrium of life of which the blood pressure balance is one example.

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Twentieth and Chestnut Streets.

Mercury Quartz Lamp in Cardiology

JOSEPH ECHTMAN, M.D.
New York

For a more comprehensive appreciation of the idea expressed in this article, a brief review of the physiology of the cardiac beat and of the present theories of the action of quartz light upon metabolic disturbance of calcium is important.

THE PHYSIOLOGY OF THE HEART BEAT

The chief inorganic salts found in the body are chlorides, phosphates, sulphates and carbonates of sodium, potassium, calcium and magnesium. Iron is present in a small amount. Sodium, potassium and calcium have jointly a favorable effect upon muscular contraction, notably upon that of the heart beat.

The perfused fluid most commonly used for successful resuscitation of the heart beat in an artificially perfused heart is the socalled Ringer's solution containing sodium, potassium, and calcium chlorides in certain proportions. Both calcium and potassium in the fluid seem to be essential, the former favoring contraction and the latter relaxation. If the proper balance of these salts is present in the fluid regular contractions and relaxations of the cardiac muscle will take place. The addition of glucose materially improves the nutritive qualities of the perfusing fluid.

It is evident, therefore, that inorganic salts (and probably sugar) are most necessary for the normal action of the heart in the living body.

When the body becomes demineralized a diseased state of the heart, lungs and probably other organs may ensue. We know today that demineralized, chiefly decalcified, patients suffer from a derangement of metabolism of calcium. The usual recalcification by diet and administration of calcium salts may not be of value in such patients until this derangement of metabolism is corrected, otherwise the ingested calcium will not be utilized by their bodies. In their metabolic studies Orr, Holt, Wilkins and Boone (1) show that patients suffering from derangement of calcium metabolism fail to retain calcium and phosphorus, although an adequate amount is present in their diet. The employment, however, of ultraviolet radiation causes large amounts of these elements to be retained in the body because calcium metabolism is influenced greatly by "exposing the patient to the biologic or aircooled ultraviolet rays which induce in the body whose skin surface they strike an increased metabolism of calcium" (Pacini).

THE THEORIES OF HOW ULTRAVIOLET RADIATION AFFECTS CALCIUM METABOLISM. THE SYMPATHETIC NERVE STIMULATION THEORY ACCORDING TO PACINI (2)

Metabolism of calcium is specifically influenced by the sympathetic nervous system whose terminal filaments end on the skin surface and respond to externally applied stimuli, but not to all. It is known, however, that they respond to the region of ultraviolet rays isolated by Pacini and separately by Hess. This response may have to do with the corpuscles of Pacini which are known to respond to thermol influence. Stimulation of the sympathetic through these nerve endings favors calcium metabolism. Therefore, when the little penetrating ultraviolet radiation strikes the skin the energy stimulates the sympathetic nervous system resulting in an increased calcium metabolism.

It is the opinion of others that the quartz rays stimulate calcium metabolism simply through direct stimulation to proper activity of the thyroid and parathyroid bodies whose control over calcium metabolism is an established fact. Lorand (3) assures us that judging from his large experience with ultraviolet rays the latter stimulate the endocrine glands, especially the thyroid. The reports of Grant and Gates (1) on the effect of ultraviolet rays in connection with calcium metabolism on normal rabbits show that the parathyroid glands of the rayed animals were thirty-two per cent. heavier than those of the controls. Blood calcium increased about 12 milligrams p.100 centimetres in twenty-two days of daily radiation. According to the observations of Novak and Hollander (1) calcium alone does not improve calcium metabolism. Calcium with thyroid extract affords temporary improvement in calcium metabolism. Calcium and thyroid medication together with quartz radiation appear to fix permanently calcium metabolism. I have reason to believe that calcium salts, without thyroid[1] but conjointly with quartz radiation administered for a long period, are sufficient.

Quartz radiation influences beneficially not only the calcium content but also the iron and sugar content of the blood. Humphris (4) states that the iron content of the blood is increased and Alpern (1) reports that the sugar in the blood is increased as the result of quartz light radiation.

In view of such important changes produced by quartz light in the blood chemistry, i. e., enriching it in calcium, iron and sugar, substances most necessary for the nutrition of the heart muscle, quartz light, logically, becomes an important modality in cardiology.

Calcium and iron are elements the heart needs for perfect activity, and Osborne (5) named them as cardiac nutritives; the same is applied to sugar. Goulston (6) of London remarks that sugar is of great value in any case where there is reason to believe that the musculature of the heart is failing. Nature seems to regard sugar as a heart nutritive: physiologists have noticed that there is a remarkable amount of glycogen in the sinoauricular node and the auriculoventricular bundle and its connections. We also know that the addition of sugar (glucose) materially improves the nutritive quality of the solution for the artificially perfused heart.

CARDIAC CONDITIONS IN WHICH QUARTZ THERAPY AND NUTRITIVES ARE INDICATED

In the treatment, therefore, of disturbances of the heart these cardiac nutritives should be employed along with quartz therapy. I have noticed that this

[1]In disturbances of the heart thyroid, if chosen for any reason, must be used with greatest caution or not at all.

armamentarium—quartz light, calcium salts, sugar[2] and iron conjointly used[3] is of decided benefit in the following cardiac conditions:

1. Patients with affection of the myocardium where there is a continuously increased heart rate (tachycardia). MacKenzie (8) states that one of the fundamental causes responsible for myocardial affections is a deficiency in some nutrient. This fundamental cause is often overlooked. Of course the various foci of infection must always be looked for in any form of treatment of any cardiac condition. These foci may be, as pointed out by Matthes (9), in the teeth, tonsils, gallbladder, rectum (not included by Matthes), female generative organs, prostate or appendix. Other possible causes which would exclude myocardial affection should be kept in mind, such as neuroses, masturbation in young people, etc. "But there is a series of cases in which it is difficult to account for the rapid pulse especially when it occurs in the apparently strong and in the prime of life" (8). Many patients of this group are greatly benefited by the treatments outlined above.

2. Cases of irregularity of the heart beat with premature contractions (extrasystole). Lewis (10) says: "The presence of premature contractions is an indication of a local disturbance of cardiac nutrition whether temporary or permanent."

3. Rheumatic endocarditis of recent development with mitral insufficiency.

4. Functional disturbances of the heart.

MODE OF GIVING THE TREATMENTS

The patient is at first exposed to radiant heat. The body is just warmed, not heated, as heating the body in cardiac conditions is not advisable. This is followed by a careful and gentle massage in the following manner: legs and thighs are massaged from toes upward, the trunk from the neck down and from side to side. Abdomen following the anatomical course of the intestines using a circular stroke. This procedure relaxes the patient, stimulates peripheral circulation and is very useful, especially in cold weather. The importance of this preparatory treatment is obvious if we consider that the ultraviolet radiation penetrates only a short distance. Furthermore, it is through the cholesterol contained in the skin through which important changes take place during quartz radiation. The activated cholesterol is taken up by the peripheral circulation and through this by the general blood stream and distributed and fresh unactivated cholesterol brought to the surface (Hess, 1).

After the peripheral circulation has been stimulated by radiant heat and massage the quartz light treatment proper is started. Radiation of the entire body is necessary. Here a point of caution is important. According to Levy (1) general irradiation of the whole body at the first sitting may lead to dangerous visceral engorgements. It is therefore sound practice, when general irradiation is intended, to commence by fractional exposures, at each sitting exposing a fresh part and increasing the exposure of previously treated regions until the whole body may be irradiated. Another important point is not to burn the cardiac patient, a first degree erythema[4] being enough for the first two or three treatments on the same region. During the subsequent treatments a second degree erythema[5] is given and never stronger throughout the entire course. A distance of thirty to twenty-four inches from burner to patient is suitable in most cases. Treatments are given twice or three times a week for a period of three to six months with some rest intervals. In the obese cardiac the erythema may be stronger. It may also be given stronger over the precordium, if the patient complains of pain in that region.

It should be noticed that the time and distance to produce a given erythema depend upon the reaction of the patient to the quartz rays. This reaction differs with various patients. There are in fact patients who react comparatively little to the quartz rays. Each patient is a case for itself, and in quartz treatments, as well as in other treatments, the use of good judgment is highly important.

REPORT OF CASES

Case I.—Mrs. Y., aged thirty-eight, suffering from heart trouble, came to my office in November, 1923. She complained of dyspnea, difficulty in walking a couple of blocks, especially walking upstairs, and said she was unable to carry any weight for a short distance without experiencing some exertion. There were no interesting points in her past history except her occupation, as a girl, of cigarmaker.

Physical examination: Tonsils in bad condition; teeth in very bad shape, bridged, capped, pyorrhetic; lungs negative; visceroptosis, umbilical hernia (wearing an abdominal supporter for many years); heart apparently enlarged, rate 120, extrasystols of which she seemed to be very conscious for she said that her heart was "moving like," "throwing itself" and some other peculiar sensations. There was a systolic murmur at the apex.

The urgent necessity of fixing the teeth was impressed upon the patient, who, in turn, expressed her great fear to do so, feeling that she might die in the dentist's chair. I treated her medicinally and advised the tooth brush, but without any improvement. She then visited one of our older cardiologists, without result, and returned a few weeks later to my office. I advised her to try the treatments. The result was marvelous. She started very gradually to feel better, stronger, and towards the close of the treatments she was able to go out shopping and carry the bundles herself. The heart's rate gradually decreased to 85 and became steady, the extrasystoles became less frequent and eventually entirely disappeared. She visited me recently. It is nearly two years since she

[2]Honey is sugar in its best form for the cardiac, though cane sugar, but not beet sugar, may take its place. Beet sugar according to Goulston's (6) experience seems not to possess any nutritional value for the heart muscle while cane sugar does so specifically. Why it is so he is unable to say. He cites a curious fact confirming the great difference in the nutritive value of these sugars told to him by practical bee keepers that the syrup made for feeding bees in winter must be made with cane sugar, for if it is made with beet sugar, the bees deteriorate, many contract diseases and die.

[3]That is during the course of quartz treatments the patient is instructed to ingest several times a day moderate doses of calcium salts, in any form, iron in small doses, and honey, diluted in milk or water, as I had the opportunity to observe that the use of either of them alone, i.e., the quartz light or medication (the latter stands for calcium salts, iron and sugar) is of less advantage than the use of both conjointly, for my patients were automatically divided into three classes. Some, who did not care for any medication, received radiation only. There was another class who could not afford to take treatments and received medication only. A great number however, constituted a third class where both medication and ultra-violet radiation were utilized. The best results were obtained with this class.

[4]That is, "such a slight reaction that only a delicate pink can be detected on the treated area which is not followed by easily visible exfoliation of epidermis" (7).

[5]That is, "one where the reddening of the skin is apparent at a glance after the reaction has appeared, and is followed by a granular exfoliation of the epidermis" (7).

was treated. Her heart rate is normal. There are no extrasystoles. She feels well and is self confident in her improvement, for she goes out alone which she never dared to do before, fearing to drop dead in the street, as a doctor said that this could happen to her. Her teeth are still in the same condition.

Case II.—Miss M., aged twenty-five. She had had scarlet fever and nephritis as a child. Two years ago acute rheumatic arthritis developed, involving nearly all joints one after another which became swollen, red and painful, with very painful subcutaneous fibroid nodules on tendons about the fingers, hands and wrists. I was the last physician treating her condition from which she apparently perfectly recovered after two months of illness. During the illness the heart did not show any suspectable sign or symptom. A few months later she came to me complaining of discomfort about the chest accompanied by dyspnea especially on walking upstairs, dizziness, tiredness as soon as she walked a few blocks which she never experienced before. Physical examination revealed the presence of a systolic murmur, rather harsh in character transmitted upward along the sternum. There was apparently no enlargement of the heart, P^2 was slightly accentuated. It is important to remember that some diseases, such as rheumatism, nearly always do damage, though not immediately noticeable. Setting in, insidiously, like a thief, their mischief eventually comes up to the surface (Aschoff). In view of her comparatively recent rheumatic condition, it was plain that the patient had a valvular lesion of recent development, or the lesion was in the process of development. The treatments were started immediately. There was a gradual improvement in her subjective symptoms, and after a sufficient number of exposures the murmur became barely perceptible. She visits me occasionally, feels very well and walks upstairs without any discomfort. Many cases of interest could be cited, if space would permit.

I am not the only worker in this field, i. e., attempting to improve or cure cardiac conditions by the use of quartz light, for Bach (11) of Germany lays claim to even greater results than I do, as seen from his following words: "The author—Bach—has obtained without exception not only passing but permanent and indeed striking improvements in a considerable number of cases of heart trouble with failure of compensation, insufficiency of the mitral valve, dilatation," etc., but the work was started by me independently.

Case III.—This is a report of my first case. In March, 1923, a girl suffering from acne indurata presented herself for treatment. Routine examination disclosed the presence of a functional systolic murmur. The patient also complained of some subjective symptoms concerning her heart. The modus operandi of the treatments was much the same as that outlined above. After a considerable number of treatments the patient's heart was incidentally reexamined. The murmur could not be detected. The patient also stated that she felt on the whole much better than she ever did before.

As one who has been doing cardiac work since 1920, I decided to elaborate upon the treatments and apply them in various cardiac conditions, and the story of my experience is given above.

COMMENT

The clinical results obtained by the treatments are based upon their nutritional and detoxifying effects. The former was touched upon above. Concerning the latter the quartz light is known for its detoxifying influence by increasing body elimination, while one of the important properties of calcium salts, "diluted in the body fluids they are a detriment to toxin" (12).

SUMMARY

Physiologically the heart for its daily work needs minerals (chiefly calcium salts) and sugar. The cardiac patient due to disturbance of metabolism of calcium, lost these nutritive salts which must be replaced in order to improve or cure his diseased condition. The replacement of calcium simply by appropriate diet and administration of calcium salts may not be of use until his calcium metabolism is corrected. For the latter the ultraviolet rays are theoretically and practically of recognized value. The employment of calcium salts, iron and sugar conjointly with ultraviolet rays seems to be of greater advantage than either of them, i. e., the medication or the rays, used alone.

Cardiac conditions treated by the author with encouraging results: Myocardial affections with continuously increased heart's rate, extrasystoles, recently developed valvular insufficiencies due to rheumatism, and functional disturbances of the heart. The clinical results obtained by the treatments are based upon their nutritional and detoxifying effect.

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340 East Seventeenth Street.

Noninfective Arthritis in Women.—E. P. Cumberbatch and C. A. Robinson (*British Medical Journal,* April 3, 1926) have observed a series of cases of arthritis in women in which it seemed clear that no infection existed. These cases were either in young women in whom the onset of the arthritis coincided with the establishment of menstruation, or in women at or about the age of the menopause. It seems that in some of these cases of arthritis in which no focus of infection can be found are due to absence or deficiency of hormones of the ovary or other pelvic organ. These are amenable to treatment by diathermy applied to the pelvic organs. Heating of these organs by diathermy has resulted in subsidence of the inflammation of the joints and complete functional restoration, unless such new bone formation or other organic changes have taken place as to render restoration of function impossible.

The New Building of the New York Academy of Medicine

The opening of the new building of the New York Academy of Medicine on Fifth Avenue and 103d Street was celebrated by a dinner in honor of the newly elected honorary fellows at the Waldorf-Astoria Hotel on the evening of November 17th, formal opening exercises at the new building on the next afternoon, and the presentation of the newly elected honorary fellows, followed by the Carpenter lecture by Professor Pupin in the evening. The library was opened for consultation on the following morning, November 18th, having been closed for the preceding ten days while the books were being moved from the old building in Forty-third Street. A detailed description of the new building, the addresses delivered at the dinner and the opening exercises appear in the pages which follow.

THE DINNER

The banquet hall of the Waldorf-Astoria Hotel was completely filled by the guests, when after the elaborate dinner had been disposed of Dr. George D. Stewart introduced as the first speaker Dr. Harvey W. Cushing, of Boston, surgeon in chief of the Peter Bent Brigham Hospital. Dr. Cushing spoke of the library as a factor in the medical field, giving a brief outline of the history of the Boston Medical Library Association, which was founded over a hundred years ago. Dr. Stewart next introduced Hon. James J. Walker, Mayor of the City of New York, who said, among other things, that when it became necessary for him to appoint a Commissioner of Health he consulted the Academy of Medicine. The Academy had no candidate to offer but did aid him materially by endorsing two of the several names under consideration. One of the two thus endorsed had been appointed and, he was happy to say, had made a most efficient officer. Mayor Walker said

that he owed this country a debt that he could never hope to repay for the opportunities which it had offered to his father when he landed here a poor immigrant fifty years ago. He felt that he was under special obligations to do all that lay in his power to improve that cosmopolitan section of the city in which he had been born and reared; where bits of China, of Russia, of Italy, of Roumania, and of Ireland were crowded together into what was referred to as "the slums," a name and a condition which he hated and which he was doing his best to wipe off the map of the city. He was grateful to the Academy for its aid and knew he could continue to count upon it for the future in his efforts, through the health department, to better the sanitary conditions and to improve the health of the citizens of the greatest city in the world.

Dr. George E. de Schweinitz, professor of ophthalmology, University of Pennsylvania, spoke as a representative of the College of Physicians of Philadelphia. Dr. William Sidney Thayer, professor emeritus, Johns Hopkins University, pictured the emotions which would be felt by Laennec, the anniversary of whose birth happened to coincide with this celebration, if it were possible for his spirit to take part in these festivities. Sir Ewan John McLean, professor of obstetrics, University of Wales, Cardiff, spoke briefly as the representative of the British Medical Association.

FORMAL OPENING

The formal opening of the new building on the afternoon of November 18th began with an invocation by the Reverend Henry Sloane Coffin. The president of the Academy, Dr. Samuel A. Brown, presented a brief address on The Services of the Academy in Medical Progress, and Dr. Arthur B. Duel, chairman of the building committee, reviewed the building of the Academy. An informal reception followed, tea being served and the guests invited to inspect the building.

Among the visitors present at the afternoon reception and inspection was an interesting group of medical librarians, including Charles Percy Fischer, librarian of the College of Physicians of Philadelphia; Charles Frankenburg, librarian of the Kings County (N. Y.) Medical Society; Miss L. M. D. Trask, librarian of the Rockefeller Institute of Medical Research; Miss M. C. Noyes, librarian, and Miss Louise Kay, assistant librarian of the Medico-Chirurgical Faculty of Baltimore.

In the evening honorary fellowships were conferred on the following men, the citations being read by Dr. Linsley Williams: Robert Barany, Upsala; Edward William Archibald, Montreal; Charles James Martin, London; Sir George Newman, London; Sir Charles Sherrington, Oxford; Henry Head, London; Marin T. Tuffier, Paris; George F. I. Widal, Paris; Josef Jadassohn, Breslau; Friedrich von Müller, Munich; Friedrich Neufeld, Berlin; Vittorio Putti, Bologna; Carlos Chagas, Rio de Janeiro; John Jacob Abel, Baltimore; Frank Billings, Chicago; Harvey W. Cushing, Boston; George E. de Schweinitz, Philadelphia; George Dock, Pasadena; John M. T. Finney, Baltimore; Chevalier Jackson, Philadelphia; Theobald Smith, Princeton, and William Sydney Thayer, Baltimore. Of these only Dr. Cushing, Dr. Thayer, and Dr. de Schweinitz were present.

The Value of Books to the Medical Profession

HARVEY W. CUSHING, M.D.
Boston, Mass.

We come here, ladies and gentlemen, on this auspicious occasion, so far as I am aware, to talk about books and a library, and what is more, about the doctors' book and the doctors' library. The history of our great community libraries containing medical books is a most unusual and interesting one.

These great assemblages of books have usually begun with an individual with bookish tendencies; he gathers some people about him in a book and journal club. Books accumulate and there is no suitable place to put them. The public libraries are tried but they are poor caretakers for a strictly professional foundling, and so the doctors are thrown on their own resources, and this is a very good thing for the doctor. The profession cannot long play the cuckoo in the matter of its books. It must build its own nest, must care for its own books. A book conscience thereby developed serves as the best possible measure of the status of the profession. As the calorimeter tells the activity of the patient's metabolism, so may you determine the plus or minus activity of the profession anywhere by the character and condition of its community library. And none less well may you gauge by the same measure the quality of a medical school, of a hospital, of a laboratory, of the individual doctor himself.

There is one peculiar thing about books insufficiently emphasized. They are bibliotrophic, one attracting another, for books don't quarrel—only their authors. House them properly and other books will instinctively come to roost, and given a good working library, rich in its books of reference, its usefulness depends upon the encouragement and convenience it offers to the reader and on the infectious enthusiasm and spirit of its working staff. The testy librarian of tradition, miserly of his treasures, nearsightedly buried in his latest acquisition, impatient of interruptions, is an extinct species, and if such persons ever really existed outside the pages of fiction it would be charitable to us to ascribe their traits to the absentmindedness that a most exacting task is prone to engender.

You have doubtless heard how late one afternoon the college librarian started home with a friend, and finding that it was raining returned to the library for his umbrella. As he did not reappear he was sought for and found absently looking for the object under "U" in the catalogue.

DR. JOHN W. FRANCIS
President, 1848, 1855

To inoculate a doctor with the library habit he must be caught young. You must set a trap for him so bated he will walk into it unawares. There is no use to counsel him to read. Books must be put in his way so that he will stumble over them and make his own discoveries.

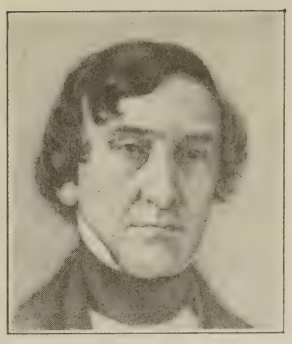
William James once told how as a child he discovered a huge book one rainy afternoon in the garret of his father's house. He read it with absorbed interest till called to his supper, then told his mother he had found a most wonderful book full of battles and killing of people. It was called "The Holly Bibble."

It is someone's business in every medical school to teach laboratory methods to students, but no one's business to teach them how to use medical literature which will be infinitely more useful to them than experience with smoked paper and Ludwig's drum. Short talks on the use of such a library as yours might well be made obligatory, sectional exercise for medical students. Such exercises, I am aware, and methods of looking up subjects, or the use of the great indices sometimes meet with discouragement, as when the student requests a copy of "Ibid." as being just the work he is looking for.

No, there is only one thing to do with the young man in these days of the movie and jazz and the flivver; place both books and cigarettes in his way and caution him to beware of them as dangerous. He will certainly take to one, perhaps to both. This may, after all, be the right track, to warn young people against books as a bad habit, or at least against book collecting, for one may become enslaved and soon so enveloped by books they are in the front hall and in the dining room till you never can find the volume you want and you are sure your wife or the children must have taken them when they borrowed your paste pot.

This, I take it, is what has happened to your New York Academy of Medicine and explains this meeting. You had become so swamped with books in your original quarters that the original volumes could not be found when called for. In fact, beware of books. Some biologist has stated that if nature could take her course unimpeded the world would become populated with elephants wallowing about knee deep in a seething mass of mice. This man knew nothing about books. As a species they are imperishable. Against their multiplication nature has no chance whatsoever. The time will come when every tree has been felled for paper, every calf for leather and the few long haired and ill nourished people left in the world will be making card indices of the volumes which have filled every available cranny in which they can be stored.

Laws will have to be passed against their importation; only a quota of French, German, Italian and Polish (especially Polish) books will be admitted each year, for should you happen to leave a pair of foreign books long on a shelf in the state known as their original wrappers, they breed with amazing rapidity. Then, too, they have their diseases and are troubled like too many children—they have worms, they wear out their clothing, they break their backs, they dislocate their joints, they require the constant care of a bibliotherapeutist.



DR. FRANCIS UPTON JOHNSTON
Vice-President, 1847

But there is no use telling you to beware of books when you have already burned your bridges. Books will like the looks of your new building and come in such swarms, you will be driven out and into a new building in another generation. A library which does not grow is the corpus inanimi—the better it is, the faster it grows.

We in Boston made the usual small beginning more than a century ago, the books of a doctor's club in the house of an individual doctor. Then they moved to an apothecary shop, then to the medical school, thence to a public library, thence to a succession of supposed permanent homes. The first was the former dwelling of Dr. Samuel Greeley Howe (who happened to marry "The Battle Hymn of the Republic," which served to obscure Samuel in favor of Julia) thence to a larger home, then to a beautiful Academy building where now there are so many books there is scarce standing room for the librarian and his staff.

Fortunate as the older communities like Philadelphia, Boston and New York may be in their present magnificent collections, there are always more books to buy and one cannot afford to wait for donations. The more precious classics of medicine, the number of which is limited, grow more and more rare, more and more expensive for the competition is great. New schools are being founded that know the value of books. It is rumored that Tulane is buying, also Rochester, Cleveland, Detroit, Pittsburgh and the new Duke University plans to have a great library for its medical department. So even a school of undergraduates may enter into competition with you for books.

At the Johns Hopkins Library, they have drawn plans for a building with a potential stack room for nigh half a million volumes and appointed a one time New Yorker whose name spells success for whatever he attempts to fill another chair as professor of the history of medicine. Such a post for such a man in such a place indicates progress in medical science, merely building on a knowledge of the past of which libraries are the storehouse. The tendency of our recent times has been to lavish gifts on our laboratories and neglect our libraries, but medicine needs both if we are to uphold our vaunted reputation of being a scholarly profession.

I bring to you, Mr. President, from the Boston Medical Library Association our greetings and not only our greetings but congratulations on the transfer of your precious collection of books to its new quarters.

The College of Physicians of Philadelphia

GEORGE E. DE SCHWEINITZ, M.D.
Philadelphia

It is a real privilege to be here tonight and to hold in happy anticipation an invitation to take part in the ceremonies of tomorrow which shall signalize a notable achievement in the fair field of medical endeavor.

It is an honor to represent the College of Physicians of Philadelphia, for I assume that this pleasant task and highly appreciated duty constitute my credentials, and to bring to you, Mr. President and Members of the Academy of Medicine of New York, the hearty felicitations of the collegiate body which I have named on the consummation of your labors and the fulfilment of your cherished desires.

The Academy of Medicine of New York and the College of Physicians of Philadelphia, separated in distance by about a hundred miles, are unseparated in their cooperative effort to maintain the dignity of literary intercourse and acquirements, and to enhance the value of medical and surgical effort.

"Like mighty partners, equally they raise
Yet neither envious of the other's praise."

I have denominated membership in the College of Physicians as my credential, and hence it is not out of place, following a suggestion of your secretary, to say a few words which shall serve to introduce the Philadelphia institution to the New York Academy of Medicine, even though I know full well that we are acquainted, and that on many pleasant occasions representatives of our respective memberships have exchanged pulpits (let us hope to mutual satisfaction), and that therefore I come not altogether as a stranger, not merely as a colleague, but, quite happily, as a warm and admiring friend.

The erection of a College of Physicians in Philadelphia was, in 1767, suggested to Thomas Penn by John Morgan, but his proposals were rejected and a charter was refused. Subsequently several physicians, who later became Fellows of the College, after their graduation from the School of Medicine of the University of Pennsylvania (then called the College of Philadelphia) went to Edinburgh and London to enhance their medical education, and, struck with the success and value of societies in those cities, on their return debated the need of similar efforts in the new country, and Samuel Powell Griffith expressly states, writing in 1783, that an American College of Physicians constituted an urgent need. Similar ideas were recorded in letters which passed between the physicians to whom I have referred and friends they had made in England and Scotland. Therefore several forces were active in the foundation of the College in Philadelphia, and the Royal College of Physicians of London became its prototype.

Although instituted in 1786, when an election of officers took place, the first meeting after full organization did not occur until January 2, 1787, and this day, by common consent, is regarded as its official birthday, and in less than two months from today its 140th anniversary will be celebrated.

Those present at this first meeting, namely, John Redman, president; John Jones, vice-president; Gerardus Clarkson, treasurer; James Hutchinson, secretary; and William Shippen, Jr., Benjamin Rush, John Morgan and Adam Kuhn, censors, signed the constitution, and the device for the seal was adopted which reads *"Non sibi sed toti."*

In the quaint language of this Constitution, it is stated that "the objects of this College are, to advance the Science of Medicine, and thereby to lessen Human Misery, by investigating the diseases and remedies which are peculiar to our Country, by observing the effects of different seasons, climates, and situations upon the Human body, by recording the changes that are produced in diseases by the progress of Agriculture, Arts, Population, and Manners, by searching for Medicines in our Woods, Waters, and the bowels of the Earth, by enlarging our avenues to knowledge from the discoveries and publications of foreign Countries; by appointing stated times for Literary intercourse and communications, and by cultivating order and uniformity in the practice of Physick."

The Fellows of the College were selected from "persons of merit in the profession of medicine"; by direction "good moral conduct and decent deportment" became a *sine qua non* of eligibility.

One month after the College was founded, Benjaman Rush wrote: "By assuming the name of a College, we shall first be able to introduce order and dignity into the practice of physic, by establishing incentives and rewards of character. . . . Our meetings will serve to correct or to improve our conduct. And if we are as chaste as we should be, in the admission of members, a fellowship in our College will become in time not only the sign of ability, but an introduction to business and reputation in physic."

Even as Benjamin of old settled his tribe in the fertile valley between Ephraim and Judah, so this canny Benjamin of a later day realizing, again to quote, that "an Fellowship in the College would mean an introduction to business and reputation in physic," we had faith that the area between the Schuylkill and the Delaware would prove to be "a fertile one," and his faith has been justified.

For almost a century and a half the Fellows of the College have followed the line of conduct laid down by the founders, and have striven to maintain a proper relation to the ethics of the profession, to assume a guardianship over the health, safety and morals of the community, and to lend their aid to medical effort, medical achievement, medical research and medical literary advancement.

True to the tradition of all physicians who approach their tasks with rightness of heart, force of character and straight thinking the records of the Fellows in peace, war and pestilence are clean.

When the days from 1793-1798 were evil, and in Philadelphia yellow fever took its heavy toll of victims, they exhibited, as all physicians always have done in all emergencies, unselfish devotion to duty regardless of personal danger, even though their con-

ferences were not always free from disagreement as to the etiology of this plague, which they disputed, as Hacket would say, with an acrimony of voice and gesture. The names of two of the founders of the College find place on "the illustrious head roll of medical martyrs."

But it is not of medical effort in war and disaster that I should speak, for we are content to know that physicians in all lands have not failed to serve their governments in times of dire distress, and serving with fine fidelity, have written noble chapters into the war histories and sanitary records of their respective countries.

The prime object of a College of Physicians or an Academy of Medicine is to enlarge our avenues to knowledge from the discoveries and publications, not only of the countries in which they exist, but from those of foreign lands—hence the need of establishing libraries. The library in the College of Physicians in Philadelphia began in 1788 by a donation of twenty-four volumes from John Morgan. Slowly at first, but in later years swiftly, it has developed, and today its bookstacks and shelves contain 149,739 bound volumes, 26,797 theses and dissertations, and 163,786 pamphlets, at present being sorted according to subjects preparatory to binding. Among these volumes are many rare and valuable books, and of incunabula we possess 371 titles and 255 volumes, of which 240 photostat copies have been made. In the journal room the current medical literature of the day in all modern languages is well displayed and of easy access, and at this time the total number of such periodical publications received is 1,203.

The Library of the New York Academy of Medicine, like the one to which reference has been made, is also a splendid storehouse of the gathered thoughts and the scientific records of medical men. I extend to you congratulations from the College I have the honor to represent on this fine achievement. Once more we are, indeed, "mighty partners," each glad of the other's success, neither envious of the other's praise.

These libraries, and I do not forget those of established and mounting reputation in other cities of the country, constitute interpretations of our steadfast endeavor to elevate the standard of medical achievement and enhance the value of literary effort. They have gained and maintained their allotted order of precedence among the best of the great medical book collections of the world. Deeply impressed as I am, and as all of us are, by the importance of such achievements, I am equally impressed by the necessity of cooperation, the necessity of working for the profession to which we have the honor to belong, in "perfect sympathy and uncontending equity."

Membership in the New York Academy of Medicine, and I trust also in the College of Physicians of Philadelphia, constitutes a patent of nobility, and carries with it a compelling responsibility—the responsibility which resides in organized medical effort with relation to community service in the widest acceptation of that term. Of course I know how great the endeavors along these lines have been and are, but I know of no reason why they should be not greater, more effective, and more satisfactorily carried on, especially as they are concerned with proper publicity through the channels best equipped to reach the largest audience. I hope the day is not far distant when on some occasion there may be a combined meeting of the New York Academy of Medicine and the College of Physicians of Philadelphia, and the whole matter discussed and rearranged.

And now I crave permission to join with the members of the Academy of Medicine of New York in saluting your guests from afar, and in avowal of our debt to them and to the medical and scientific achievements of the countries they represent—a debt we gladly acknowledge, a debt we cheerfully own. I am sure there is no member of our fraternity here tonight who, when writing up the credit page of the ledger of his life, does not smile happily at many entries he is enabled to make because of stimulation and instruction he has received in the laboratories and clinics across the seas.

Importance of the Library in Medical Practice

WILLIAM S. THAYER, M.D.
Baltimore, Md.

It is interesting to reflect that when we meet tomorrow at the beautiful new building of the Academy, the point of reunion for all students of medicine in this great community, 'twill be about the Library that we gather. The library—the book—is still the common point about which students collect today, as, centuries ago, readers met about the old tomes chained to their shelves.

In the dark ages of blind reverence for authority, the manuscript, the book, the great compilation gathered about the aphorisms of an old master whose word was as revealed, was the foundation of all knowledge. The old master had been generally a keen observer and a wise man; the scribe too often was his servile worshipper, spinning a web of more or less valuable discussion about the kernel of the annals of the seer. Man who has always been a slave to the word, bowed down before the book. The tyranny of words has aways been the most dangerous of human powers.

But there were men who dared to look for themselves; who dared to seek and who found; who dared to knock and to whom it was opened. These men, who had burst the confining bonds of the tyranny of words, to whom the search for truth was above the worship of authority, consigned to the written page their observations, their experience, their perceptions, their deductions, their opinions, sometimes in cryptic phrase, sometimes openly; and sometimes, as Michael Servetus, they gave their lives in payment. First the anatomists and then, as Allbutt has so well pointed out, the humble surgeon in the days when

"sacerdotal, scholastic and military convention" had excommunicated surgery and made that false and pernicious schism in medicine in its broader sense which exists to the present day. The anatomist and the surgeon led the way, in times when the physician was indulging in vain dialectics as to the arm from which one should bleed, and were entering on what Huchard calls "the antimonial war of a century." Precious milestones, these works, in the annals of medicine, preserved for us all in libraries such as yours.

The physiologist and the student of pathology in its full sense followed, and with the improvement of the art of printing, medical literature, no longer restricted to dissertations on the canons of the master, became a record of the experience, the achievements, the constatations, if one may use the word, the hypotheses of the observer and the experimenter.

The birth one might almost say of the art of diagnosis of internal disease, dating from the time of Morgagni and Avenbrugger and Laennec, placed the physician on his own feet, and began to wean him from his servile worship of the assertion of another. On the other hand, rapidly accumulating contributions to medical science and art printed in an increasing number of books and periodicals in all countries and in all languages, rendered the library more and more necessary to student and practitioner.

Medical literature was no longer the record of authority; it became the record of achievement. The contributions of the last fifty years with the birth of an art of therapy based on scientific foundations are recorded in a literature increasingly voluminous.

But in this old world there are still vestiges of virgin forest. From the prostrate trunks of stately trees has sprung, alas, a literature which is as a "pestilence that walketh in darkness"—a "destruction that wasteth by noonday."

Have you ever happened on river or lake, to meet with the birth of a generation of "Mayflies." You are gazing peacefully at a lovely sunset, and of a sudden, the air is full of flying things—light, thin, long, squirming, green, almost translucent bodies with large transparent spotted wings. They come in clouds. In a moment you are covered. They are in your eyes, your ears, your nose, crawling down your neck and up your sleeves. You rush for cover, and as you go you tread on a crackling mass, and slip on the slimy bodies of myriads crushed under your feet as they carpet the deck. Once within, you may open neither door nor window, through which light no longer comes. Without, everything is covered and hidden by layers an inch or more thick. Ephemeridæ, they are sluggish in the morning, shriveled and dead by another night, but in their lifetime they have shut the light from your eyes and hidden all that you would see, while the slime from their bodies, crushed as you pass, tangles your feet and hinders your progress.

Even so from the trunks of the felled trees of the virgin forest has arisen a substance by courtesy or convention called "paper"—a crying insult to the paper of the past! From this burlesque on paper there has burst upon us a cloud of "literature," not only general but medical, which obscures the sky. As by a generation of Mayflies, we are submerged by medical ephemeridæ. Advertisements of every imaginable sort, periodicals, columns in the daily press, carefully "written down" for the intelligence of a child. Books written to record the experiments, studies or the achievements of the author? Oh! no. Books written on time, at the request of a publisher—compilations, in great part, and too often of little value. For medical literature today is largely the literature of the publisher.

Smothered and blinded by this plague of ephemeridæ, 'tis to the library again that we turn. As the sailor sweeps the deck, so the devoted librarian sorts and classifies and catalogues or sweeps away and burns this incubus of literature, so that we may more readily find the jewels buried beneath the ephemeral cloud.

That this great and growing library should now at last have a home fully worthy its present excellence and its future promise is of happy omen for the profession and public of this city and of the country at large.

'Tis not uninteresting that this year, the year of the opening of your new building, is a medical anniversary of some importance. 'Tis the centenary of the death of Laennec, and of the birth of the second great edition of his book in which is set forth for the first time the real basis of pulmonary diagnosis.

A charming figure he must have been. The little, spirited, spiritual man, the architype of the Celt, with his oval face, his large expressive eyes, the long humorous upper lip. Scholar and classicist, who at eleven had translated the first Georgic of Virgil into good French meter; poet, who at the same age was writing fables in excellent verse; lover of nature and of music; profound, devoted student with a deep reverence for those who had gone before; whose inaugural thesis was on the doctrine of Hippocrates, whose works he had read and pondered in the original Greek. Anatomist who at the very outset of his career had described the subdeltoid bursa and the capsule of the liver. Pathologist, whose description of peritonitis as a pathological and clinical entity, published in the earliest years of his medical life, is a classic; whose anatomical and clinical descriptions have never been surpassed. Inventor of the stethoscope. Author of *Ausculation médiate* in which is set forth a method of clinical procedure which is a model for all time; which contains descriptions—in good part original—especially those of bronchiectasis and emphysema—of pathological changes in the lungs and of methods of clinical recognition of such changes which are the very basis of modern clinical medicine. Vigorous defender of his ideas, and spirited, sometimes bitter opponent of his contradictors. Brilliant, successful, wise practitioner and teacher, devout withal, and one of a group presented to the Pope, which was greeted by the memorable exclamation: *"Medicus pius—res miranda!"* (a pious doctor, marvelous object!). Dead at forty-four of that disease to which he had given so much of his life. The father of modern diagnosis.

Fancy for a moment that the angel Ithuriel, disturbed by the reports of the press and Sinclair Lewis' novels, were to dispatch Laennec to inspect the medical circles of New York, as he sent Barbouc some years ago to Persepolis. Fancy the delight of the little master at the advances in our knowledge of dis-

DR. VALENTINE MOTT
President, 1849, 1857

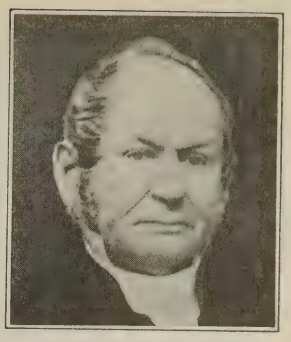
ease, at that which bacteriological and serological studies have brought; at the applications of chemistry and physics to the medical sciences; at the possibilities of modern diagnosis; at the multitude of instruments of precision, the clinical thermometer, the ophthalmoscope, the laryngoscope, the use of the electric light in endoscopy in all its forms, the sphygmomanometer, the x ray; at the growth of a therapy resting on a scientific basis; at the schools and libraries and hospitals such as you would show him today.

But fancy for a moment his surprise, when, on entering a hospital ward—the little master in his swallowtail and choker, his big stethoscope in its green leather case in his coattail pocket—fancy his surprise on entering the ward and finding himself face to face with a comely nurse with jaunty cap and bobbed hair, and plucked eyebrows, and slightly hectic cheeks, and pale nose, and curiously cyanotic lips, and shortish skirts; or on meeting in the corridors those visions of beauty with shorter skirts and bobbed hair whose very presence is a social service! Fancy what his feelings would have been! But no, rather let us refrain! There may be reporters in the room. I fear that he might suspect with the Reverend Increase Mather, that the devil appearing as an angelical apparition might lurk behind these alluring visions! He would have to learn, but he would learn in time, that they *are* "angels of light" after all.

And then fancy his surprise at the language employed at the bedside—Laennec who always dictated his opinions and diagnoses to his students in Latin, *"pour des raisons faciles à sentir,"* as he said. Latin! Gone in one short century! Latin—for so many hundred years the language of scholars. "What on earth," he would say, "is the sense of wasting years in the acquisition of a few barbarous modern languages when in Latin all scholars may meet?" "That new word 'standardization' which rather offends my ear," he would reflect, "seems to be a sort of semi-religious ideal of this strange new generation which is feverishly seeking the shorter way. But the one standard which has endured through more than fifty generations, Latin the language of learning and of the church, this one standard they have thrown away. 'Tis passing strange!" But when some bright-eyed enthusiast told him of "Esperanto," he would understand. He would open his mouth, nod his head, tap his forehead and whisper to himself: "Ah mad!—all mad!"

And when he saw men looking at x ray plates before they examined the chest, making pulmonary diagnoses, perhaps, from a plate alone—or blindly accepting the opinion expressed by the radiologist without so much as seeing the plates—when he saw this he would cry aloud: "But these are shadows that you are chasing! Listen, touch, smell, look! Look at your patient before you turn to shadows. From the shadow you may learn much, but would you interpret life and reality which is before you from shadows alone?"

He would marvel at the new therapy resting on scientific foundations. But when he, who was so careful and considerate of his patient, saw the advertisements of our wholesale chemists, and the manner in which their products are used by some of our colleagues on the mere basis of the conscienceless and preposterous statements contained in this literature; when he saw the amazingly reckless manner, the levity, one might almost say, with which poisoning substances of all sorts, notably mercurial and arsenical compounds, are introduced into the circulation of the patient, he might ask himself, what had become of the careful methods of clinical and pathological control which he had helped to initiate. He might indeed ask himself if the indiscriminate bleeding of his own day were not perhaps less harmful and equally intelligent.



DR. THOMAS COCK
Vice-President, 1847
President, 1852

Fancy his satisfaction at the coöperation shown in the study of diagnostic and therapeutic problems in our better hospitals and clinics; but fancy his surprise and uneasiness at the exaggerated subdivision of the work in some clinics and some institutions, and at the frank and open speculation on the supposed fortunes of their patients by some physicians and surgeons.

And then when he read *Arrowsmith* and talked with the misanthropic individuals who are always with us ready to gloat over the iniquities of this world, might he not well have some anxiety as to the future of medicine? But when he met the leaders of medicine in New York today, when he went out into the rural medical societies and associated with the country doctor; when he met and communed with such men as are in this hall tonight, he would surely realize that the doctors of today are in the vast majority of instances a fine, highminded set of fellows, trying to do their best, associating and working together for the common good, far more intimately and far more harmoniously than was ever done in his day.

And when his visit was done and his report was due he would have made by the best founder in the city, a beautiful model of the new quarters of the Academy of Medicine, "composed of all metals, earths, and stones, the most precious and the most vile." He would lay it at the feet of Ithuriel, and he would say: "Your serene highness" for he was a courtier, and even angels are susceptible to adulation, "Your serene highness, I have visited New York. I have found men and women, physicians and laymen much as they were in my own day; as credulous, as prejudiced, as suspicious, as covetous as we were. They have the same old faults, the same old passions, the same old prejudices. They live in a country which boasts much of its freedom, and sometimes they seem to me hardly so tolerant as we were a hundred years ago. But collectively they are re-

sponsible for this beautiful thing, and all that it represents, infinitely more beautiful and beneficent than anything that existed or could have existed—than anything we could have dreamed of in my day. Shall we break this lovely thing, because all that is in it is not gold and diamonds? Shall we condemn all this beauty and all this progress in the science and art of medicine, all this spirit of coöperation among medical men, because after all it is the work of men and women with all their human frailties. In your own words, *'Si tout n'est pas bien, tout est passable'*, (if all is not well, all is passable) and so much more so than in my day! May it please your highness, if I might be allowed to suggest such a thing, may I dare to hope that in another century, your serene highness may consider the possibility of sending me back again? And may I be justified in expressing the hope that your highness will assign me to the New York Academy of Medicine? And that if it be not too much trouble, your highness might arrange to send George Stewart with me to preside at the dinner?"

The Building of the Academy

ARTHUR B. DUEL, M.D.
Chairman Building Committee

There is no more striking human characteristic than the desire to own and maintain a home. The American has been possessed with this same desire in the same way as has existed in other civilization. Man desires a home primarily for shelter for himself, his wife and his children. This is his primary desire, but relatively few of them appreciate the mental, moral and spiritual features that rarely exist outside of the home. This home instinct has been sadly injured by the enormous growth of our urban interests, disrupted by the facility of modern communication and made increasingly difficult by the extravagance and congestion of our city life. One hundred years ago in this country, the home was practically the only meeting place for social intercourse, and there the members of the family heard discussed by their elders, the various problems of the day—politics, religion, education and all matters pertaining to community life.

It is therefore natural that groups of individuals are prompted to seek a home or meeting place, in the present day, when homes are no longer available, except in rare instances, for permitting free discussions and providing facilities for social intercourse.

Eighty years ago a group of physicians living in New York City were strongly urged of the need of bringing together from time to time the leaders in the medical profession in the fields of practice, teaching and research, for the purpose of taking counsel with each other; and for advancing the practice and art of medicine; and for the promotion of public health. The leader of this movement was Dr. John W. Francis, a dominant figure in those days, whose efforts were successful in bringing about the organization of the New York Academy of Medicine. The majority of the doctors who were interested in the formation of the Academy were active members of the Society for the Widows and Orphans of Medical Men, which organization still exists and has offices in the present building of the Academy.

The search for a home began immediately, though it could only serve the purpose of providing temporary housing for the first born child, namely, the promotion of the art and practice of medicine by the holding of meetings and conferences. These meetings were held, first at the Lyceum of Natural History, then at the Convention Hall in Wooster Street, later at New York University, and since then at the last temporary quarters at the College of Physicians and Surgeons. The search for a permanent home continued, and it was finally possible for the fellows of the Academy and their friends to secure what we would now consider old fashioned—a high-stoop, brownstone home at 12 West Thirty-first Street, which was opened in 1875. The desire of the fellows to render more service to the profession, soon prompted them to organize a library and to subscribe to the current medical journals, so that the fellows of the Academy might keep abreast of the progress of medical science. The leader of this movement was Dr. Samuel Smith Purple, who made the first contribution to the library as soon as the new home of the Academy was opened on Thirty-first Street. This was the second child of the Academy whose growth and development have been prodigious. The Academy, having increased in numbers and the meetings becoming steadily larger, there was an urgent need for a larger room than the ordinary parlor of this old fashioned building, and as a result of the activity and generosity of Dr. Abram Du Bois, a meeting hall was built in the rear of the building, which was named after Dr. Du Bois.

Continued growth of the library and the increasing number of the Fellows made it seem imperative to have larger and more commodious quarters and as a result of continued effort, during 1887-8, a new building was constructed at 17 West Forty-third Street, which at the time seemed to fulfil all the immediate and future needs of the Academy. Its spacious meeting hall was made possible by a large gift from Mrs. Selina B. Hosack in memory of her husband, Dr. Alexander Eddy Hosack, after whom the hall was named. In appreciation of the memory of Dr. Abram Du Bois, the next largest meeting room in the new building was dedicated as Du Bois Hall.

This building proved commodious enough to permit two more children to develop lives of activity and usefulness within its walls, namely—the Public Health Committee and the Bureau of Clinical Information. The second child, however, continued to grow, and the library was soon found to be too small for future development. Not only had the stack become overcrowded but also the reading rooms, for it was the only public medical library in the City of

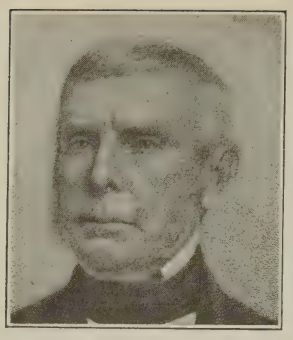
Hosack Hall, the Auditorium, on the Ground Floor

New York, until the organization of the Kings County Medical Library some years later.

As early as 1909, the library committee called attention to the urgent need for more room for books and more room for readers. During the year 1909 a scheme was proposed for the construction of a new building at Seventh Avenue and Thirty-eighth Street, and a successful effort was made to obtain additional funds. For the construction of the building, the Academy Extension Fund was created, and this increased to over $130,000 in 1911. But this was insufficient to make it possible to seriously consider the construction of the new building. In 1911 plans were drawn for alterations and additions to the existing building at Forty-third Street. A lot was purchased at 15 West Forty-third Street and an additional lot which was subsequently sold, was purchased in the rear on Forty-fourth Street. It was found that it was extremely difficult to remodel the building on account of the fact that the stack was a fixed unit and could not be enlarged without almost a complete reconstruction of the building. As funds in sufficient amount were not available, the plan was again postponed.

The continued growth of the library and the constant recommendations of the library committee for increased space, urged the trustees to reconsider the possibilities of making additions to the building at Forty-third Street and serious consideration was given to this matter in 1917. But the matter had to be left on the table on account of the war and the fact that nearly half of the Fellows of the Academy were engaged in some form of War service. The matter was taken up again in 1919 and working drawings were prepared for additions and alterations to the old building. The Fellows were never fully satisfied with this proposal as it did not permit of sufficient room for later expansion, so postponement again was the order of the day. In 1921, the picture was entirely changed when Dr. Henry S. Pritchett, the then acting president of the Carnegie Corporation, recognized the value of the services rendered by the Academy to the medical profession and thence to the public; and the possibilities of its increasing usefulness and service, and saw the need of a new building. It was not long before conferences were held with the officers of the Carnegie Corporation and the Rockefeller Foundation, and in 1922 the Carnegie Corporation voted a grant of $1,000,000 for the purpose of constructing a new building for the Academy.

During the summer of 1922, sketches were made of buildings for sites on East Fifty-seventh and Fifty-eighth Streets and also for Sixtieth Street and Park Avenue, and during the spring of 1923 the Academy engaged in an active campaign for funds to purchase a new site and an increased endowment of $206,161.64 was subscribed by 1313 Fellows of the



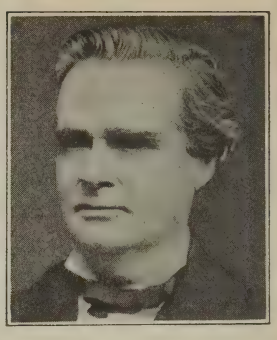
DR. JOSEPH M. SMITH
President, 1854

Academy. In addition, various friends of the Fellows contributed $324,922.78. Of this latter sum there was included a gift of $100,000 from Mr. George F. Baker, $50,000 from Mr. James B. Ford, $50,000 from Mr. Edward S. Harkness, and $50,000 from Mrs. Helen Hartley Jenkins. The trustees in this year purchased a lot at the corner of Sixtieth Street and Park Avenue, for which the sum of $750,000 was paid; and preliminary drawings were made for a building on this site, the plans for which were matured during the summer of 1923. The plans called for a building which would have cost $2,225,000, and the expense would have been large, due to the fact that on a lot 100x120 feet, it was not even practicable to build the stack anywhere but within the main building.

It should be emphasized that the limitations of growth forced the Academy to move from Thirty-first Street and the limitations of the growth of stack forced the Academy to move from Forty-third Street, and although the stack proposed at Sixtieth Street was far larger than the immediate needs of the Academy, yet it was a fixed unit and did not permit of any future expansion.

An attempt was, however, made to see what type of building could be constructed for a million dollars, and it was then thought with that sum a building could be erected which would be but a little larger than the existing building at Forty-third Street. After this attempt had been made, it was decided by the Academy that a larger building would have to be constructed on a larger lot and that elasticity must be provided for the expansion of the stack, and for future growth of the Academy's other activities. The Academy accordingly determined to sell the lot at Sixtieth Street, which was sold in 1924 for a million dollars, and the present site was purchased in the same year for $225,000, which was subsequently added to by the purchase of a lot adjoining on East 103rd Street for $17,500. The selection of a site was not easy, and it will not be necessary to consider any detail of the various considerations of sites that were made during the winter of 1924. It suffices to say that over a hundred sites were considered, many of which were inspected by the trustees, and with the inspection of several small sized, undesirable lots, none were available for a price of less than half a million dollars, with the exception of the present site. During the summer of 1924 the architects, York and Sawyer, prepared a series of schemes. The trustees determined upon the present plan, and building operations were undertaken in the spring of 1925. The cornerstone of the present building was laid on October 30, 1925, and today the building is completed.

It is now seventeen years since the first discussions were begun, which led to the culmination of our ardent desire to find a home which could be permanent and satisfactory for the needs of our family. Opportunity is now offered to inspect the building, which has been designed primarily for utility, but with the same desire that exists in every happy family, to preserve its mementoes and treasures, to embellish the home in so far as funds will permit, and to have it useful, simple, dignified and beautiful, all of which we feel have been accomplished. With full realization of the reasons why the Academy was forced to leave Thirty-first and Forty-third Streets, the building has been so constructed that the stack is a separate unit, which may be increased not only upward but also to the side, if future needs require it. The main building is also so constructed as to permit the addition of a number of stories and also the auditorium extension permits the addition of several stories above it. Who can visualize the future? We have not tried to visualize what the Academy may be or what its needs may be fifty years from now, but we have visualized in so far as is possible, and have produced a building which permits of expansion for every possible future need that can now be conceived of.



DR. J. MARION SIMS
Orator, 1857

The construction of this beautiful building could not have been possible had it not been for the enthusiasm and vision of Dr. Henry S. Pritchett; nor could it have been completed without the enthusiasm of Dr. Pritchett's successor as president of the Carnegie Corporation. Mr. Frederick P. Keppel had also been convinced of the usefulness of this growing institution and an additional gift of $550,000, making a total of $1,550,000, was contributed by the Carnegie Corporation. Nor would it have been possible to plan and develop the additional educational facilities of the Academy, included in the extending activities of the library, the Bureau of Clinical Information and the Committee on Public Health Relations without the enthusiastic support of the Rockefeller Foundation, which has promised the sum of $62,500 annually and with the capitalization of that sum in the near future of $152,000—and we here record again our everlasting gratitude to Dr. George E. Vincent and Mr. Edwin R. Embree of the Rockefeller Foundation for the interest they have taken in our work.

To the members of the library committee who served since 1909 is due no small measure of praise for their constant desire to find fireproof, permanent and commodious quarters for the library, and to the Board of Trustees and members of the Academy whose interest and patience during this long and trying period has been a striking example of service to a noble cause. I record also my gratitude and appreciation to the valued service by my colleagues on the Building Committee—and finally, I am convinced that no such building, combining such rare qualities of usefulness and beauty, could have been produced without the service of Messrs. York and Sawyer and their illustrious partner Mr. Louis Ayres, who has carried the brunt of the work and whose

vision has produced the work of this building. The construction of the building, its details and its beauty, are largely due to him, but great praise is due to Messrs. Otto and Robert J. Eidlitz, who have constructed the building under his direction. The furnishings and decorations have been the result of a combination of the artistic ability and skill of Mr. Louis Ayres and Mr. Barnet Phillips. During this process of construction, there has been no rift in the lute—all have worked together with their shoulders at the wheel for the production of a thing of beauty and a joy forever.

The Service of the Academy

SAMUEL A. BROWN, M.D.
New York
President, New York Academy of Medicine

In my contact with patients and friends, I find that the Academy of Medicine is not well understood. They say, "Oh, yes, the Academy! We presume it is connected with a medical school, or it is part of some hospital. We know that you have a library but you can't possibly need a big building for a library."

Therefore, I thought that this afternoon I would present to you some of the activities of the Academy, in order that the functions of the Academy might be better understood by many of our friends.

The Academy was organized in 1848 by a group of men who were leaders in the profession, who had in mind the betterment of the practitioner of medicine, to the end that he might render better service to the public. They devoted their energy to the advancement of medical education, to the scientific development of their members, and to all matters relating to public health.

As time went on they organized regular scientific meetings, which have been continued until the present time, and at these meetings the best minds of the country are requested and invited to present the results of their experience, so that the members of the Academy may be kept abreast with medical science.

Of course, it would not have been complete without a library. The library was started in the time of Dr. S. S. Purple, the president, when the Academy was at 12 West Thirty-first Street. It has grown from a very small beginning, until today it is the third largest medical library in the world.

The privileges of the library and the facilities of the library are not limited to the members and fellows of the Academy. They are available to medical students, to students in sciences allied to medicine, and to the public. In fact, this library occupies a position in relation to medical literature similar to that which the Public Library occupies in relation to general literature.

More recently, there has been created a Bureau of Clinical Information. This Bureau now provides information about hospitals, clinics, and postgraduate courses of various types to physicians from all parts of the country. Hundreds of physicians now come to the Academy during the year from out of town and receive advice as to the type of refreshing courses and postgraduate education which they desire to undertake. The Bureau is also able to advise foreigners in regard to courses in this country, and to advise our medical men and students of the various postgraduate courses available in Europe, thereby saving them much time in making their contacts when they go abroad.

The Academy has also devoted much time to matters of public health. This activity was graciously referred to by the Mayor at the dinner last night.

In the early days of the Academy, during the decade of 1850-1860, the Academy took a most active interest in supporting the agitation for the organization of a Board of Health, for the abatement of the evil of feeding cattle within the city limits, and other such matters. Early in this century, the Academy successfully supported a movement for the transfer of the State Quarantine Service in the Borough of New York to the Federal Government.

In 1911 the Academy organized a special committee on public health, hospitals, and budgets, and this committee has actively continued its interest in these matters as they affect the city. Through the influence of this committee, now entitled the Committee on Public Health Relations, the Academy has been successful in bringing about the abandonment of several dispensaries and other institutions no longer needed; it has been able to persuade members of institutions to change their policies in order to better them; it has published several books and pamphlets which have had an important bearing on the hospital situation in New York.

The organization of the Dispensary Development Committee was a direct result of the Committee on Public Health Relations.

Although the Academy has not taken an active part in securing new legislation, it has frequently lent its advice and influence for the modification of many laws affecting the practice, holding itself somewhat aloof from the political aspects of the situation. This may or may not be a wise thing to do.

The building of the Academy has been a meeting place for the societies of the county and the state of New York and a score or more other societies, thus bringing under one roof nearly all of the medical societies and activities of the city, especially of the Borough of Manhattan, promoting a mutual understanding, and advancing the interests of the profession.

The Academy has provided offices for the Society of Widows and Orphans of Medical Men, the New York Physicians' Mutual Aid, and many other organizations.

The Academy has also rendered a service to the

community and to the medical profession by its constant endeavor to maintain a proper standard of ethics among the members of the medical profession. Although ethics and professional courtesy are frequently misunderstood by the laity their existence is primarily for the benefit of the patient.

I have often heard this building spoken of as a beautiful monument to the profession. Personally I like to think of it as a workshop, for in years to come it will be the output of this workshop which will be carefully criticized when the justification of this large investment is to be considered.

The Men Who Made the Academy of Medicine

LINSLY R. WILLIAMS, M.D.
New York
Director of the Academy of Medicine

At the celebration of the fourth anniversary of the foundation of the Society for the Relief of Widows and Orphans of Medical Men which was held at Peletier's saloon, 579 Broadway, New York, on November 18, 1846, Dr. Alexander H. Stevens of the College of Physicians and Surgeons, responding to the toast "The Medical Colleges and Schools of Our Country" expressed the hope "That the increasing unanimity in the corps would lead soon to the establishment of a 'Medical Hall,' unconnected with hospitals or colleges, to contain meeting rooms, a library, etc., and be a place of general resort, both for ourselves and brethren from abroad."

In less than a year the New York Academy of Medicine held its first regular meeting. The meeting for organization was preceded by a published call signed by Dr. Valentine Mott, Dr. Alexander H. Stevens and Dr. Isaac Wood, representing respectively the Bellevue Medical College, the College of Physicians and Surgeons and the Medical Society of the County of New York. This meeting was held in the hall of the New York Lyceum of Natural History at 561 to 565 Broadway on December 12, 1846. Dr. John Stearns was elected chairman and Dr. F. Campbell Stewart secretary of the meeting. Dr. Mott, Dr. Stevens, Dr. John Watson, Dr. Manley, Dr. Riese, Dr. Cox, Dr. Wood, Dr. Francis and others spoke.

The following committee was appointed to prepare a constitution and by-laws: Drs. Francis, Bliss, Watson, Griscom, Benjamin, Drake, Barrowe, Riese, A. S. Purdy, J. R. Wood, and Tomes. Later Drs. Stevens, Mott and Isaac Wood were added to the committee which reported to a meeting held on January 6, 1847, at which the constitution and by-laws were adopted as submitted and were signed by one hundred and thirty physicians.

The objects of the Academy were set forth as:

First.—The separation of regular from irregular practitioners.

Second.—The association of the profession proper for purposes of mutual recognition and fellowship.

Third.—The promotion of the character, interests and honor of the fraternity, by maintaining the union and harmony of the regular profession of the city and its vicinity, and aiming to elevate the standards of medical education.

Fourth.—The cultivation and advancement of the science, by our united exertion for mutual improvement, and our contribution to medical literature.

Fellowship was restricted to regular practitioners of medicine or surgery in New York City or vicinity. Proprietors or venders of patent, or secret medicines or remedies were excluded from fellowship.

THE FIRST OFFICERS

A committee composed of Drs. Henry D. Bulkley, James R. Wood, Galen Carter, Willard Parker, and Edward L. Beadle was appointed to submit the names of three nominees for each of the offices to be filled. This committee reported at a meeting held on January 13, 1847, when the following officers were elected: President, Dr. John Stearns; vice-presidents, Drs. Francis U. Johnston, Thomas Cock, Sr., John B. Beck, and John W. Francis; recording secretary, Dr. Ferdinand C. Stewart; domestic corresponding secretary, Dr. William C. Roberts; foreign corresponding secretary, Dr. Benjamin Drake; treasurer, Dr. Robert Watts, and librarian, Dr. Thomas M. Markoe. At the next meeting held on January 20, Dr. Chandler R. Gilman, Dr. James Phelps, Dr. William P. Buel, Dr. Edward L. Beadle, and Dr. Luke Barker were appointed a committee to solicit donations of books for the library.

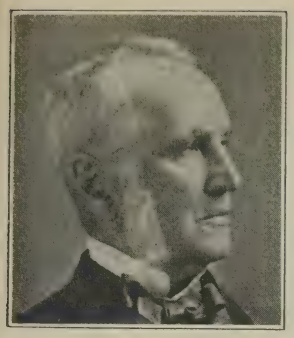
At the meeting, held on February 3rd, Dr. Stearns delivered his presidential address which was ordered published. The committee on books was instructed to provide a suitable seal and motto for the Academy. On February 24, Dr. John W. Francis was elected orator. On March 3, 1847, the last meeting was held in the Lyceum, quarters having been found in the Convention Hall at 179 Wooster Street, where the meetings were held until June 5, 1850.

The first anniversary discourse was delivered by Dr. John W. Francis at the Broadway Tabernacle. It was largely historical occupying some two hours in its delivery.

Below is given a list of the principal officers during the first thirty years, which may be looked upon as the formative stage of the institution. This list brings us down to the time when the Academy occupied its own building on Thirty-first Street.

Presidents: 1847, John Stearns; 1848, John W. Francis; 1849, Valentine Mott; 1850, Isaac Wood; 1851, Alexander H. Stevens; 1852, Thomas Cock; 1853, Isaac Wood; 1854, Joseph M. Smith; 1855, John W. Francis; 1856, Willard Parker; 1857, Valentine Mott; 1858, John P. Batchelder; 1859-60, John Watson; 1861-66 James Anderson; 1867-68, Alfred C. Post; 1869-70, Henry D. Bulkley; 1871-72, Edmund R. Peaslee; 1873-74, Austin Flint; 1875-78, Samuel S. Purple.

Treasurers: 1847, Robert Watts; 1848-1876,



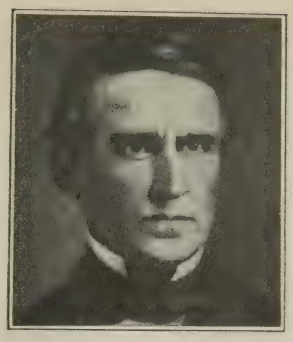
DR. WILLARD PARKER
President, 1856

James Otis Pond; 1877-1882, Horace Putnam Farnham.

Recording secretaries: 1847-1848, Ferdinand Campbell Stewart; 1849, John L. Vandervoort; 1850-51, John Glover Adams; 1852, Jackson Bolton; 1853-54, Samuel A. Purdy; 1855-56, Samuel Conant Foster; 1857-58, Charles F. Heywood; 1859-61, Theodore Gaillard Thomas; 1862-64, John H. Hinton; 1865-67, William M. Chamberlain; 1868-70, Edward H. Janes; 1871-76, William T. White; 1877-79, Edward F. Ward.

A complete list of the officers from the foundation to the present time would constitute an honor roll of medicine in New York, for its officers have ever been eminent in some field of medicine or surgery.

Below is given a list of the officers for 1926: President, Dr. Samuel A. Brown; vice-presidents, Dr. Herbert S. Carter, Dr. Frederick T. Van Beuren, Jr., Dr. Charles A. Elsberg; recording secretary, Dr. Fenwick Beekman; treasurer, Dr. Seth M. Milliken; trustees, Dr. Charles L. Dana, Dr. Fordyce B. St. John, Dr. Arthur B. Duel, Dr. George B. Wallace, Dr. Walter B. James, Dr. James A. Miller, Dr. George D. Stewart, Dr. Royal S. Haynes, Dr. Eugene H. Pool, Dr. Bernard Sachs; director, Dr. Linsly R. Williams; assistant secretary, Dr. Frederick P. Reynolds; librarian, Dr. Archibald Malloch; consulting librarian, Dr. Fielding H. Garrison; legal counsel, Frank L. Polk, Esq.



DR. JOHN WATSON
President, 1859-60

There is one official of the Academy, Mr. John S. Brownne, whose term of office has covered over forty years of its history and who has devoted his entire life to its service. A well deserved tribute to that service is paid by Dr. Delavan on another page and he himself tells elsewhere something of the story of the growth of the library from the first handful of books, donated in 1847 into the three hundred thousand titles which are now housed in the new building. Dr. Cushing and Dr. Thayer also pay eloquent tirbutes to the value of the library.

The Needs and Future of the Academy Library

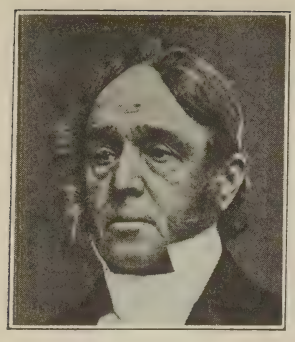
ARCHIBALD MALLOCH, M.D.
New York
Librarian of the Academy of Medicine

In the new building with more room and greater facilities for work, our duties and responsibilities will be greatly added to—and it is only right that they should be.

One of the most important of our responsibilities as an educational institution can only be met by our opening the library to the public—as distinguished from the Fellows of the Academy—for longer hours each day. It has been suggested that the public should have access to the reading and journal rooms up to five o'clock in the evening. This change will necessitate a larger staff to attend to the greater number of readers over a longer period of time and we must also meet the constant demands of cataloguing, and accessioning of books and pamphlets. With a periodical librarian placed in sole charge of the journal-room we hope to be able to inform Fellows, or other readers, on inquiry beforehand, of the appearance of articles (in whatsoever the language) upon subjects in which they have a special interest. With the increasing developments along certain lines of medical and philanthropic work the number of medical periodicals is bound to increase and we must needs subscribe to them or fall behind. Besides, there are certain Italian and Spanish magazines we must subscribe to. In Forty-third Street we were close to the library of the Chemical Society and could readily send readers over there to consult journals which we did not take. Having moved, however, we must subscribe to these chemical, and not purely medical, journals ourselves.

To increase the usefulness of the library for those whose work does not allow them much time to come to the Academy we should develop a motor call-and-delivery service. A Fellow should be able to telephone to the library for a book and have it delivered to his house or laboratory within a couple of hours. These demands will put further strain upon the staff of the library and upon our finances, but they are demands which must be met.

There is a great deal of work, work which may be called legitimate, which a library could perform for the writer of a paper and save him much time. It should consist of making lists of medical articles on a particular subject and getting the volumes containing these articles ready for the writer to see. After the writer has read over these articles in the languages which are understandable to him he should be able to have translations made and he should be able to call upon someone to copy out whole paragraphs where he wished to make long quotations. All this we trust we shall be able to do when we establish a bibliographical service, the plans for which are not yet completed. It need scarcely be said that if abstracts of articles are made by the bibliographical workers, the Academy cannot accept responsibility for their accuracy. We must not *write* medical articles but only *aid* in doing so. For this bibliographical



DR. ISAAC WOOD
President, 1850, 1853

service the Fellows must pay something, but probably at only about half the rate required of other readers. Possibly six to eight workers will be taken on the staff for this bibliographical work.

A machine is being installed in the new building so that photostats of rare pamphlets, books, or illustrations may be made on demand and sent out to any part of the United States and Canada. A new man will be employed part time for this work and probably part time for repairing books. Only if the volume of photostat work is very great will it, at moderate charges, pay for itself.

One of the most important educational possibilities of a library is the arranging of exhibitions of medical works, medals, engravings, instruments, etc., illustrating an important medical anniversary, the development of our knowledge of a certain disease, history of some branch of medicine in a special country, showing the artistic as well as medical value of early manuscripts and books on medicine, or illustrating, perhaps, the nonmedical activities—the avocations—of physicians. To appreciate thoroughly the work of those who have gone before us we must know the lives as well as the writings of those who wrought. The value of such exhibitions carefully planned cannot be easily gauged. The point here is, however, that to prepare for exhibitions of this kind requires many hours of careful research work, verifying of statements and dates, etc., and this must be undertaken by the staff.

A great need is to maintain the work which is done upon the "Union Check List of Periodicals." Only by noting on the shelves of libraries the number of years over which a certain obscure but valuable periodical sustained publication can it be definitely stated, to all who desire the information, the size of the gap which has to be filled. Because of the existence of this "Union Check List," work upon which is being carried out in the periodical stack of the Academy, we receive offers from bookdealers in the U. S. A. and Europe of chances to complete our sets of medical magazines. A bookseller in Germany, for example, notes from the list that we lack certain volumes of a certain periodical and he informs us that he can supply them.

Because our collection of periodicals, past and present, is very large, much time must be spent in the Academy upon the "Union Check List" and in this particular the larger are of great service to the smaller libraries. In the same way, we have great responsibilities in the possession of duplicates and triplicates of books, often bequeathed to us by physicians, for we must arrange to exchange or give these away to the smaller and less fortunate libraries. This work breaks in upon the time of the library staff.

It must be said that we could be of greater service to the medical men, say of Bronx and Queens, if we were to provide reading rooms, supplied with our books, in these boroughs.

DR. JOHN B. BECK
Vice-President, 1847

The time will come too, when it will be desirable to have our catalogue duplicated, printed that is, for the use of medical schools and for other libraries. Such a catalogue or bibliography justifies its existence when we realize that if any one of us, or any institution, does not possess a book on a certain subject it is impossible to know that such a book exists anywhere in the world unless we see it in a list. Specific requests could then be made of us by those living outside of the city.

In the future we should have lists of books ready on special subjects and, at the request of a struggling county medical society, we should be willing to send such collections of books. This arrangement would be of real educational value and who knows how many students we might encourage and how many practitioners we might induce to become "student-practitioners"—to use Osler's term—but we should bear part of the expense!

A library is judged chiefly by its general usefulness in supplying modern books and periodicals and those for as far back as a hundred years. But by other libraries and by the cultured and educated, a library is also judged by its possession of medical treasures in the guise of written or printed medical works. We are sadly lacking in the matter of manuscripts and there are many medical classics we need. Surely we should possess the greatest medical book—the 1628 edition of Harvey's *De Motu Cordis*—a Rabanus Maurus (1467), the first printed medical book, or the first edition of Celsus (1478). Prices are soaring up by leaps and bounds. If you ask: "Why is a facsimile not as good as an original?", we might reply with a Scottish answer, that is, with another question: "Is a copy of a painting as good as the original, is it as inspiring or as stimulating? No, the best is not too good for the Academy."

FINANCIAL NEEDS OF LIBRARY

We are fortunate in the possession of a number of interesting medical incunabula. The books printed before 1501 are constantly becoming more rare.

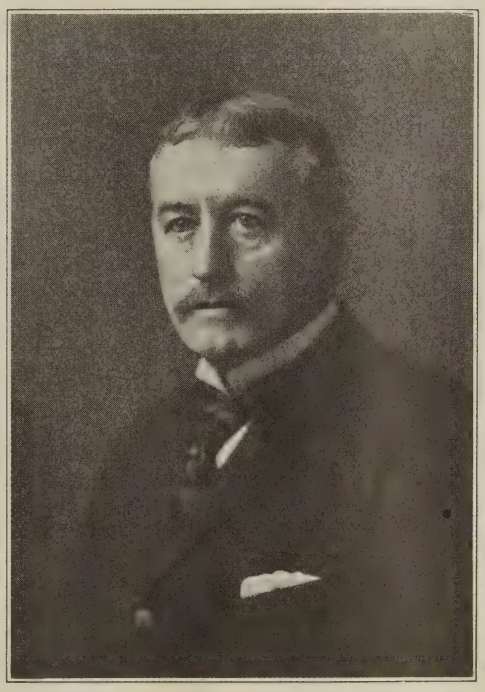
The present library endowment is $165,000 and the income from this endowment plus the income from the Witthaus estate is approximately $15,000 a year. It is estimated that it will cost in addition to this endowment and to the funds already being appropriated by the Academy, $37,500 a year, or the income of $750,000 additional endowment. We will need an additional $8,000 a year for books, journals and binding; $200,000 endowment for salaries of the library staff; and the income from $390,000 for additional salaries of personnel and administration expenses. This is a large sum of money and the income will be difficult to obtain from the Fellows of the Academy, but if anything can be obtained by the Academy for the additional endowment of the Library, it will materially relieve the burden which will be placed on the Fellows for the maintenance and operation of the new building.

The Retiring Librarian of the Academy of Medicine

D. BRYSON DELAVAN, M.D.
New York

In the course of an address on the Founders and Early History of the New York Academy of Medicine, delivered at its last Anniversary meeting, I called attention to the lifelong service rendered the Academy by its Consulting Librarian and Superintendent, since retired from active service. It now affords me pleasure to repeat here that tribute to a learned and highly efficient executive and a much esteemed friend.

The first permanent home of the New York Academy of Medicine at No. 12 West Thirty-first Street, was taken possession of by it in 1875. Within five years the number of books amounted to 25,000 and the other activities and responsibilities had become important. All the work connected with them had been carried on by a small group of its most zealous members, chief among whom were Dr. S. S. Purple and Dr. Laurence Johnson, who soon found themselves overburdened. The services of a professional Librarian and General Superintendent had become imperative. In the year 1880, one was secured, and from that time the history of the Academy has been intimately identified with the life experience of that man. For nearly half a century since there has been behind its steady growth and prosperity his influence, which has contributed vastly to its success.



JOHN S. BROWNNE
Consulting Librarian

Quietly, without a suggestion of selfinterest or obtrusiveness, that influence has been exerted for the upbuilding of our institution, with a singleness of purpose and a steadfastness of devotion for which it would be hard to find a parallel. To it, more than to any other individual factor, is due not only our material prosperity, but, even more important, that spirit of harmony which has characterized the Academy's contemporary existence. Men and groups of men in ever succeeding administrations have come and gone, each faithfully and efficiently accomplishing their individual work. This influence, exerted with intelligence and wisdom, and with complete knowledge of all that had gone before, has caused each administration to glide quietly into the next, without friction and with no interruption to the routine. The supervision of the servants and of the building, the routine of the accounts, all have come under the hand and eye of that one executive, who, with the highly intelligent aid of his genial, versatile and indefatigable assistant superintendent, Felix Wesstrom, in the execution of the details of the management has conducted the material affairs of the Academy with admirable quietness but with complete and uninterrupted success. Ever zealous in giving all possible aid, it was he who, representing the Academy, courteously received its casual visitors, aided in the plans for the entertainment of those especially honored, and in the arrangements for unusual functions of every kind. He it was to whom all of us resorted for information covering the entire range of medicine in general and the various activities associated with it, rarely failing to gain from him the desired knowledge or else to be directed with sympathetic courtesy to where it might be found.

The character and personality of the man have invariably attracted the best of those who have known him, both of the medical profession and of the laity, here and everywhere. He has gained not only their confidence and friendship but their unqualified support, encouraging where encouragement was helpful, aiding by wise suggestion when consulted, and by hearty cooperation in the execution of the work; thus in every way strengthening the institution. Through all the varying phases of nearly half a century, he has been the unfailing pilot of the Academy, its unwearying helper and friend. You, who know the Academy, will not need to be reminded that I am speaking of our Consulting Librarian and Superintendent, Mr. John S. Brownne, beloved and honored of us all.

Mr. Brownne comes of fine ancestry. His grandfather, Charles Brownne, a ship builder by profession, came from England early in the last century and established a shipyard in New York City. He was commissioned by Robert Fulton to build the *Claremont,* and thus became the maker of the first steamboat on record. Mr. Brownne's father, Robert H. Brownne, was Secretary and Librarian of the New York Lyceum of Natural History, the most influential scientific society of its time, itself an Academy in the highest acceptance of the word. From it was developed the now famous New York Academy of Science. Its membership included men of distinction in various departments of learning, among them Dr. Torrey, the well known founder of the New York Botanical Society, as well as a group of leading physicians who, taking their inspiration from the successful methods of the Lyceum and, as aforesaid, following the example of the Academy of Medicine

of Paris, conceived and developed our own Academy of Medicine.

Mr. John S. Brownne was born in King Street, Greenwich Village, New York, and after receiving an excellent education gained a position as Assistant Librarian in the Astor Library. When the Academy of Medicine moved into its new building in Thirty-first Street, its farsighted officers soon recognized the possibilities of its growth and, upon the completion of Du Bois Hall in 1880, the necessity for a competent manager. Mr. Brownne's qualifications were carefully studied by them, and after long deliberation he was selected from among thirty other applicants. Already familiar with the routine of library work, and fully informed as to the intentions and ambitions of the Library Committee of the Academy, he entered upon the duties of his office with full appreciation of the magnitude of the enterprise and of its responsibilities, and a clearly expressed determination to make the infant project the best medical library in the world. In this ambition he had the enthusiastic support of the officers of the Academy, a group of physicians who possessed the culture, the knowledge, and the influence to bring about the desired results.

Books in considerable number were given by members, among whom was Dr. Purple, an ardent collector. For many years he had gathered complete files of American medical periodicals, until he had acquired the most nearly perfect series in existence. These he presented to the Academy. Dr. Fordyce Barker was also a generous donor.

Some years before the Academy moved into the Thirty-first Street building, Dr. Frank P. Foster, editor of the *New York Medical Journal,* had established a society known as the Medical Journal Association, which had its quarters in the building 107 East Twenty-eighth Street, at that time as now occupied by Tiemann and Company. By a friendly arrangement, the Journal Association was merged into the Academy, where it occupied the third floor of the new building and at once created for the institution its department of current periodicals.

Under the zealous efforts of Mr. Brownne, the Library increased rapidly in volume and in importance. Soon after the date of his appointment, Dr. John S. Billings was made Librarian of the Library of the Surgeon General of the United States Army in Washington, and thus at once Mr. Brownne found himself confronted by a powerful rival, as shown in the competition between them for desirable accessions. In these competitions Mr. Brownne often outbid his rival, funds being provided by enthusiastic members or by their generous friends. The most important acquisition came through the Governors of the New York Hospital who, in 1898, donated to the Academy the Library of the New York Hospital, numbering 23,000 volumes, a fine collection founded in 1798, in its last half century under the able direction of its Librarian, Mr. John L. Vandervoort.

This included the celebrated collection of rare old books on the history of medicine made by Dr. John Watson, which was the beginning of the Academy's present fine collection of incunabula.

Dr. Watson's anniversary address on "The History of Medicine" was the valuable contribution of a ripe scholar who had ample sources of reference in his own library.

Year by year, with steady increase, the Academy gained in reputation and influence. Its reliability was recognized, the dignity of its ambition appreciated. The growth of its Library, according to the record, eloquently proves the esteem in which it was held. The total books in 1875 amounted to 21,720; in 1880 to 25,000; in 1900 to 49,830, and in 1910 to 80,790. In 1926 there were 139,320 books, 98,685 pamphlets, while 1,500 were journals subscribed for, making a total of 239,505 titles.

All of this has come about under the administration of Mr. Brownne, aided by various efficient library committees and by the talent and devotion of his invaluable associate of thirty-five years, Mrs. Laura E. Smith. They, throughout this long period of activity, have been the soul, the spirit of the Academy, quietly furthering its progress with rare wisdom and tact. If the fame accorded to Dr. Billings for the upbuilding of the second greatest medical library in the world is justly deserved, then equal credit is due to our own Librarian for the success of his life work in creating the Library of the Academy as it stands today, the third greatest of its kind, perfectly ordered and arranged according to the most advanced ideas of modern library organization.

Library of the New York Academy of Medicine

JOHN S. BROWNNE
Consultant Librarian

While my duties have embodied the management of the buildings of the Academy in which I have lived for more than forty years and in which my two children were born, my chief interest has been centred in the library. From the very foundation of the Academy its leaders have appreciated the important service that a library could render to the medical profession. After the organization had been effected in 1847 the first committee appointed was one charged with soliciting contributions of books to the library. That committee consisted of C. R. Gilman, James Phelps, William P. Buel, Edward L. Beadle and Luke Barker.

A circular requesting the donation of books and periodicals to the Academy was issued by this committee in January, 1847. This was addressed to the medical profession at large as well as to the fellows of the Academy. Many donations were received and a substantial nucleus for a library was obtained. But, there being no permanent place for the deposit of the books, the efforts were discontinued.

When in 1875 permanent quarters were provided in Thirty-first Street, a library committee was again appointed and became active under the stimulus of the enthusiasm of Samuel S. Purple. His presidential address two years later was devoted mainly to a

survey of medical libraries in New York. From this address we learn that a medical society existed in New York City before the Revolution but suspended operations in 1776 when the British captured New York. This was resuscitated in 1784. The first mention of its library occurs in 1787. The Medical Society of the State of New York was organized in 1794 and this society purchased the library of the Medical Society in December of that year. This was placed in charge of Dr. David Hosack as librarian on January 13, 1795, subject to the rules of the City Library then located in the City Hall. The medical library was moved to the City Hall the following summer. In 1806 this library was made over to the Governors of New York Hospital, which had already established a library of its own in 1796 in accordance with a suggestion from the faculty of Columbia College and had appropriated five hundred dollars towards that end.

In his inaugural address as the first president of the Medical Society of the County of New York in 1824, Dr. Hosack urged the creation of a library by that society. This project was adverted to from time to time. Dr. Peixotto in his inaugural address as president in 1831 said that "little success has as yet attended the attempt to form a library worthy of the character of our city or adequate to supply the wants of an extended medical community. The time has, however, arrived when we may, without exaggerated hopes, set about instituting a New York Medical Society Library." Several hundred volumes were collected and kept at the home of the secretary, Henry S. Downs. These books were sold in 1862.

Office of the Assistant Librarian, showing the antique desk, once a part of the office furniture of Dr. Timothy M. Cheesman, and willed by him to the Academy.

The New York Hospital had purchased the library of Dr. Romayne in 1800 and the great botanical library of Dr. Hosack and in 1877 this library had grown to nearly ten thousand volumes. Valentine Mott's will provided that his books and instruments be kept together during the life of his widow who might bequeath them to any grandson bearing his name who should become a physician. These with the books of the late Isaac Wood constituted the Mott Memorial Medical and Surgical Library, which was later acquired by the Academy. Other medical libraries of that time were those of Bellevue Hospital, about 350 volumes, of the College of Physicians and Surgeons, about twelve hundred volumes, and of the College of Pharmacy of the City of New York, about twelve hundred volumes, besides current periodicals. The Mercantile Library had about one thousand medical books and the New York Society about the same number. The largest collection of books on medicine and the collateral sciences was that of the Astor Library about seven thousand. There was also a Medical Journal Association whose purpose was to provide for the circulation of current periodicals among the members. This association under the leadership of Dr. Frank P. Foster, editor of the NEW YORK MEDICAL JOURNAL, was later merged with the library of the Academy.

Dr. Purple urged that an attempt be made to collate these medical books into one great medical library under the direction of the Academy.

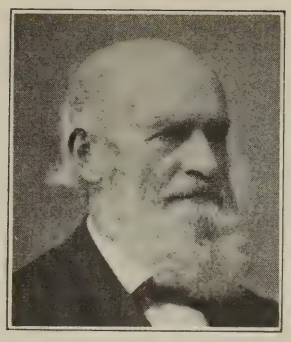
Under the stimulus of Dr. Purple's leadership and of a permanent home the library of the Academy grew rapidly. The use of the library was made free to all, and in his valedictory address in 1879 he recorded the rapid growth of the library and in the number of readers. He further proposed the establishment of a circulation department.

By 1880, when I came to the Academy, the library had grown to twenty-five thousand volumes. The large and valuable collection of Freeman J. Bumstead was bequeathed to the library in 1881. Since that time many libraries have been bequeathed to the Academy by former Fellows, among the most valuable of which may be named those of Thomas H. Allan, John O. Stone, Edward L. Beadle, and Abraham Jacobi; Dr. Purple, Fordyce Barker and Abram Dubois donated their libraries before instead of after death. The German Hospital and Dispensary sold its library to the Kings County Medical Society and donated the proceeds to the Academy. The most important of these donations was that of the library of the New York Hospital. This library of 23,000 volumes had been founded in 1796 and included the celebrated collection of rare old books on the history of medicine made by John Watson, whose anniversary address in 1860 on this subject was a most scholarly discourse. Dr. Watson's library provided the nucleus of the fine collection of medical incunabula in which the Academy library ranks third in the United States. The Academy has nearly one hundred of these books printed prior to 1500, one of which is the only copy in America, while several of them are extremely rare.

Beside books many members have either given or bequeathed money to the library fund. The following list of library funds as it appears in the report of the treasurer for 1925 shows such of these as have been maintained as separate, individual funds.

LIBRARY FUNDS

Below is given a list of the several library funds in round numbers: General Library Fund, $41,606; J. Marion Sims, $100; James S. Cushman, $1,000; Orville R. Flower, $1,000; Anna Woenshofer, $15,000; William T. Lusk, $1,000; Semicentennial Committee, $500; German Hospital and Dispensary, $3,076; Albert W. Warden, $950; Landon Carter



DR. ALFRED CHARLES POST
President, 1867-68

Gray, $45,596; Rudolf A. Witthaus (ultimate residuary legacy estimated), $120,000; Everett Herrick, $25,000; Phillippine Meyer and Ernst Jacobi, $14,486; Merrill Whitney Williams, $220; Ernest Krackowizer, $1,798; Austin Flint, $1,200; Bullowa, $754; A. L. Northrop, $250; James P. Tuttle, $1,000.

Professor Rudolf Witthaus left a large estate from which the library receives five thousand dollars a year. He left other heirs incomes for life. After the death of these beneficiaries his entire estate is to revert to the Academy.

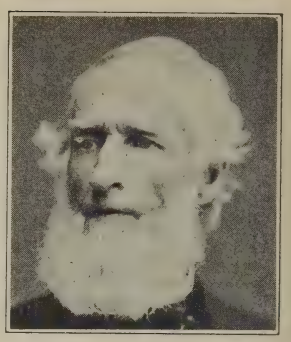
The increasing rapidity with which the library has grown is shown by the following figures:

1875	Books	21,720
1880	Books	25,000
1900	Books	49,830
1926	Books	139,320
1926	Pamphlets	98,685
1926	Journals subscribed for	1,500

The total titles including pamphlets and journals at the close of 1925 amounted to 239,505.

The mere possession of books make a large library. It is the use to which they are put that makes the library of value. Realizing this fact, the New York Academy of Medicine has always pursued a most liberal policy throwing open its doors to all for free consultation during the morning hours, though reserving the later hours of the day for Fellows. The loan of books to Fellows is encouraged in every way. List of new accessions are distributed to the fellows semimonthly and expert assistance is rendered to such as are engaged in bibliographical research. In such rapidly developing fields as medicine and surgery such research is of very great importance as a basis for original experiment and study. First of all the physician or surgeon must know what others have done so that he may avoid unnecessary duplication in his own work.

Assistance is rendered first of all by the general card index of the contents of the library which is divided into two sections, a subject index and an author index. To the professional librarian this may sound like an heretical practice; but experience has shown that this arrangement minimizes and facilitates the labor of those who use the index most.



DR. EDMOND RANDOLPH PEASLEE
President, 1871-72

Next we have complete files of the *Index Medicus* issued quarterly by the Surgeon General's Library, and the *Quarterly Cumulative Index* issued by the American Medical Association. These index both books and current periodical literature.

In the handsome room reserved for Fellows all accessions to the library are placed on open shelves for a certain time so that those who choose may see the new books as they arrive before they go to the book stacks.

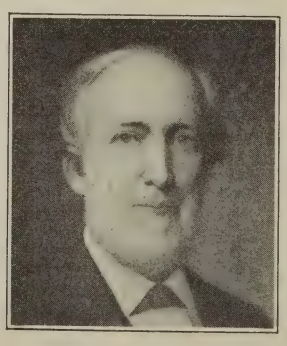
Some 1500 current medical periodicals in all the modern languages are of convenient access to all, whether Fellows or not, in the current periodical room, while in the adjoining room bound volumes of the recent years of those periodicals most called for are kept on easily accessible open shelves.

In relinquishing the task which for forty-five years has filled every minute of my waking hours, I do so with the joy that comes only to workers, the joy of achievement; with delightful memories of the long line of learned, scholarly, gentlemen with whom that work has brought me into friendly intercourse and of grateful appreciation for the expressions of friendly esteem and appreciation which have been brought out by my retirement. From that retirement I shall continue to watch with pride and affection the still greater growth and widening usefulness that surely awaits the New York Academy of Medicine and its library.

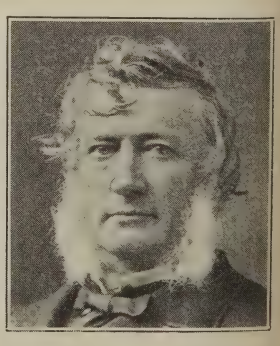
To those whose faithful cooperation with me has contributed so largely to the success of the library I wish to express here my sincere appreciation for this loyal and intelligent assistance. It will not be an invidious distinction for me to name one in particular, Mrs. Laura E. Smith, who has been my willing, intelligent and untiring coworker for the welfare of the library for the past thirty-five years.

DR. HORACE P. FARNHAM
Treasurer, 1877-82

DR. AUSTIN FLINT
President, 1873-74



DR. SAMUEL S. PURPLE
President, 1875-78



DR. BENJAMIN FORDYCE BARKER
President, 1879-84

Main Hallway, Showing Entrance from 103rd Street

Art and Architecture of the Academy of Medicine's New Home

MABEL WEBSTER BROWN
New York

Beauty, comfort and convenience, healthfulness, and adaptability to the greatest possible utility, growth and progress, are, in every civilized land, the recognized standards of a house or home, whether it be the habitation of an individual, a family, an institution or organization, or a community. Eighty years ago a realization of the value of these standards was in the mind of Dr. John Watson, who, on the evening of December 12, 1846, addressed a meeting of the medical profession of New York City, called to discuss "the establishment of a Medical Hall, unconnected with hospitals or colleges, to contain meeting rooms, a library, etc., and to be a place of general resort for ourselves and for our brethren from abroad." Dr. Watson said that the imperfect action of a medical body depends upon the want of a proper place of meeting; if the profession would all set to work, they would soon have an ornamental and useful one; that he hoped the time was not far distant when the medical clubs, or private societies, would come together; if so, the profession would be organized and subject to no reproach. Twenty years later Dr. James Anderson said, in addressing the then established New York Academy of Medicine: "The great duty now resting upon us is that we secure a site and erect a building thereon that shall not only be an ornament to the city, but an honor to the Academy and the profession—a Great Medical Centre, that shall be both attractive and scientific." This ideal, of a combination in its home of beauty, use, and adaptability to scientific progress, have remained constant in the minds of the Fellows and friends of the New York Academy of Medicine since its official founding on January 6, 1847, up to today, and have attained their highest and most complete fulfillment in the beautiful new building, opened to Fellows and the public on November 18, 1926.

The earliest homes of the New York Academy of Medicine were of necessity small and simple. The first meeting was held in a room of the Lyceum of Natural History at 561 Broadway, at that time the representative scientific institution of the city. From March, 1847, until June, 1850, a rather inconveniently located and uncomfortable room in Convention

Hall, Wooster Street, was used. Considerable improvement was shown in the next meeting place, from 1850 to 1860, which was the building of the University of the City of New York, on the east side of Washington Square. This temporary home was a fairly attractive one and the meetings were well attended. The next meeting place was the College of Physicians and Surgons, at the corner of Fourth Avenue and Twenty-third Street.

Members who possessed libraries now began to donate them to the Academy, so the need for more room soon became an urgent one, and finally led to the Academy's acquiring its first separate home, a private dwelling with a brown stone front which was adapted to meet the requirements. The location was at 12 West Thirty-first Street, and the first meeting was held there on May 20, 1875. The house consisted of four stories and basement, and, for five years, provided commodious accommodations for meetings, the fast growing library, and other purposes. In 1880, however, the necessity for a larger meeting hall became imperious, with the result that Dr. DuBois authorized the construction of an annex at the rear of the building. This hall was given his name.

In a few years the increasing number of members and activities of the Academy, and the still rapidly growing library, made the Thirty-first Street building totally inadequate, and a lot on West Forty-third Street was purchased. A six story fireproof stone building in modified Romanesque style was completed in 1890. By 1910 the library had grown to such an extent that, for its proper accommodation, two houses adjacent to the building were purchased and part of one of them used as an additional stack room. This building contained among its rooms Hosack Hall, given in memory of Dr. Alexander E. Hosack by his widow, Mrs. Céline B. Hosack, and Woerishoffer Hall, given by Mrs. Anna Woerishoffer in memory of her husband, Dr. Charles F. Woerishoffer. These halls have been perpetuated in the present building of the Academy. It housed also the offices of a number of related organizations.

Very soon, however, the building on Forty-third Street, which had seemed so ample to meet all needs for an indefinite period, had become insufficient for housing the Academy activities and its still rapidly growing library, so steps were taken which led in the end to the present beautiful structure on Fifth Avenue. The story of how this came about is told elsewhere. We are now ready to visit this new home.

The site is the southeast corner of Fifth Avenue and 103rd Street, insuring comparative freedom from the city's increasing dirt, dust and smoke, and providing an abundance of light, fresh air, and sunshine. Of these last, the building can never be deprived, since Central Park on the west will afford a permanent supply, as well as a very pleasing outlook over the botanical gardens in the foreground to the lawns and foliage of the park beyond.

EXTERIOR OF THE BUILDING

The main portion of the building on Fifth Avenue is made up of six stories besides a basement and subbasement. The auditorium wing on 103rd Street is three stories in height. The architectural style is early Romanesque, an art form which lends itself readily to the principles of modern building construction, as well as to appropriate decorative modifications. The tenets of the style, which originated in Italy, have been carried out both as to the exterior, and, in so far as was possible, in the interior of the building. The plain, rectangular shape, giving simplicity of form, has been relieved by the appropriate use of rich and ornate sculptural decorations, grill work, colonnades, and a rather elaborate entrance, all in keeping with the period.

Main Entrance on 103rd Street

The stone used for the walls is a combination of varieties of limestone and sandstone, giving an effect of pale yet warm creams, tans, and white to the exterior. An attractive color note is added by the blue green window casings. The windows on the ground floor are ornamented and protected by handsome bronze grills in Romanesque decorative design. At the upper corners of each window are ornamental imposts sculptured in bas-relief with figures from medical emblemology and mythology, such as various aspects of Æsculapius and Hygeia, of Typhon or Typhoeus, the mythological god of pestilence, and various animals having a significance in medical symbolism. Above each window on the first floor is inscribed in Latin a legend appropriate to the art of medicine. A frieze of large Roman letters encircles the third story which tells us: Vita Brevis: Ars Longa: Experentia Fallax: Judicium Difficile (Life is short; art is long; experience untrustworthy; judgment difficult); and Homines Ad Deos Nulla Re Proprius Accedunt Quam Salutem Hom Dando (Men in no way approach so nearly to the gods as in giving

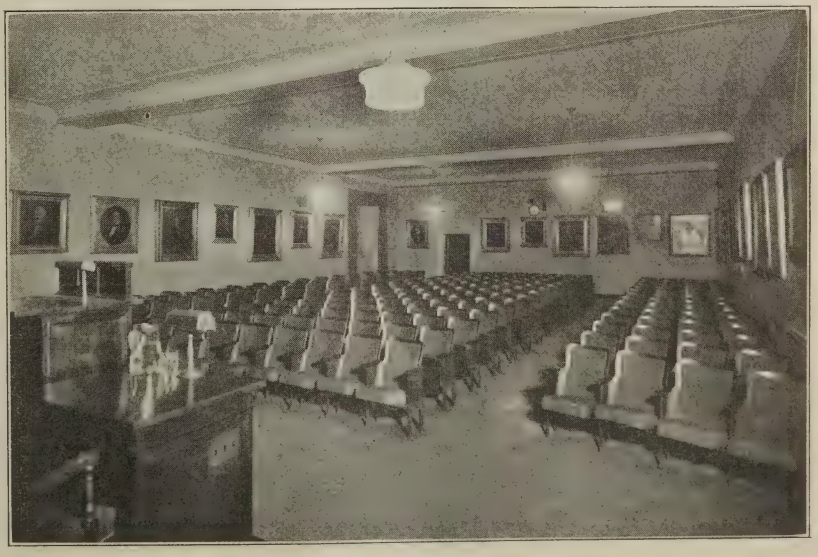
A corner of Farnam Hall, the Current Periodical Room, in the Library

health to men); on the front elevation of the building are the name of the Academy, Academia Medicinæ Nova Eboracensis, and the date of founding. The windows in the third story and in the auditorium wing are large and have the high, round arches which are one of the distinguishing characteristics of the Romanesque period. The sixth story, and the third story of the auditorium wing, are encircled with colonnades of Romanesque pillars.

The entrance to the building, which is on 103rd Street, is one of its handsomest features. The doorway is flanked by cloistered columns with ornate Romanesque caps, surmounted on either side with figures of lions. The tympanum, sculptured in mezzo-relief, shows a meeting of Æsculapius with his daughter, Hygeia, with the staff and serpent between them, and both accompanied by their faithful dogs, which, in medical symbolism, typify the spirit of watchfulness which drives away the death fiend. Hygeia carries her constant attribute, the bowl or *patera;* Æsculapius is represented, as was usual in antiquity, with his torso undraped so as to leave free his arms and hands for his medical work. This piece of sculpture is of unusual artistic merit, and suggests the classic style of art in its simplicity, dignity and beauty. Directly above the doorway is the legend: Post Mille Secula Præscinditur Occasio Aliquid Adjiciendi (After thousands of ages the opportunity persists of adding to our knowledge). On either side of this inscription are medallions in bas-relief with heads of Hippocrates and Galen. The outer entrance doors are of ornate bronze grill work of floral design, with small figures of Æsculapius and Hygeia. The inner doors are of solid bronze, panelled. There are two other entrances on 103rd Street, one for service.

ENTRANCE HALL

Entering the building, we pass through a small vestibule into the main hallway, and are struck at once with the richness and beauty of its decorations and furnishings. The floor is of reddish veined Levanto marble, with a border of white Traniville, inlaid with a mosaic pattern made of many kinds of variegated marbles. In the floor are bronze inserts representing the squirrel, rabbit, guineapig, dog, and the trifoliate mandrake leaf, all related to the science of medicine, and combined in design with herbal patterns. The walls are of cream colored Mankato marble. A broad stairway of Traniville marble leads up on the left to the second floor. There are also three elevators, these on the right. Bronze doors open into the information bureau, Hosack Hall, the Exhibit and Collation Room, the Reception Room, and a stairway at the rear. Just outside the entrance to Hosack Hall is an inscription on the wall listing the benefactors of the Academy. Other inscriptions will be added, including an expression of gratitude to the Rockefeller Foundation and to the Carnegie Corporation for their most generous contributions to the Academy; and a memorial tablet to the Fellows of the Academy who died or gave their services during the World War. The ceiling of the hallway is square-beamed, with rich, handpainted designs in warm colors, red and gold predominating. These combine arabesque patterns, derived from the medical symbolism of the Herbal School of Salernum, with representations of the many small animals and birds, which, through the ages, have come to be associated in some way with the art and science of medicine. These include the dog, whose significance has already been mentioned; the serpent, the symbol of the god, Æsculapius, himself, and signifying prudence, longevity and rejuvenation, and oftentimes, especially

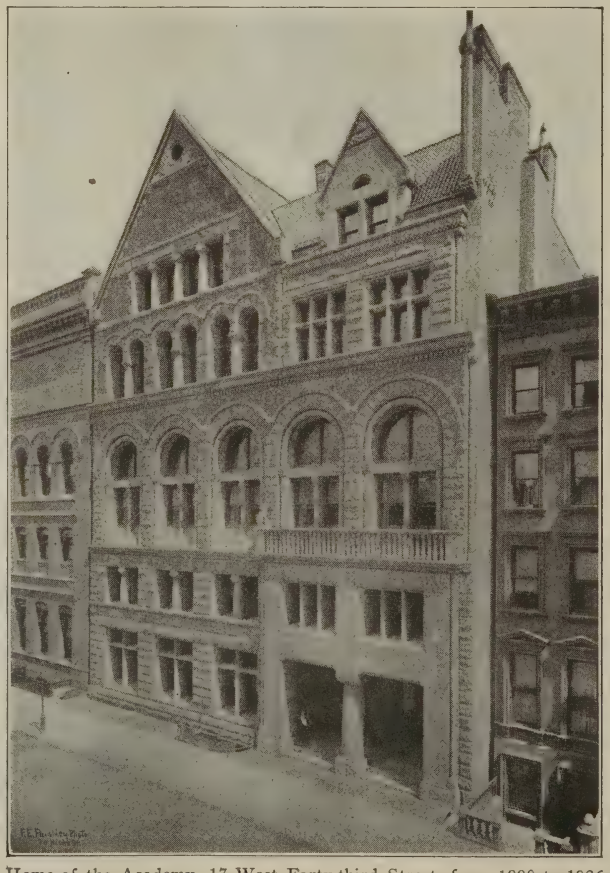


One of the Section Meeting Rooms

in the countries, such as Egypt, where serpent worship prevailed, the actual curing of disease; the cock, he who watches for returning day, the restorer of health, and also the symbol of fatherhood; the goose, symbol of motherhood; the goat, signifying lust, brutish reproductive powers; and other birds and beasts. Among the herbal symbols appearing most frequently is the mandrake, that baleful weed, which utters screams when it is pulled up so horrid that whosoever hears them goes mad, yet in some countries has been credited with having curative properties; the pinecone, symbolizing "the life of charm," whose aroma is "the breath of life," and which is sometimes represented as adorning the ends of the branches of the Tree of Life; and the Tree of Life itself. All these and other symbols and emblems have been combined into delicate and richly colored arabesque patterns and designs that make the ceiling of the hallway and those of some of the larger rooms a delight to the eye and also to the inquiring mind interested in the history of medicine throughout the ages. The only furniture in the hall is a long walnut table in Romanesque design, with two large bronze standard lamps, and some handsome tapestry chairs. The lights are bronze electric candelabra on the walls.

Home of the Academy from 1875 to 1889, 12 West Thirty-first Street

As we enter, a door on our right leads into the reception room for Fellows. This has gray green walls in brush-stippled effects, with carpet, furniture, and draperies in different shades of brown and tan. It is furnished with easy chairs, davenports, and all accessories for comfort and sociability. Here appointments can be held, friends may meet for business or pleasure, and smoke and talk at will. On the left of the entrance is the Information Bureau with its bulletin boards, etc. At the right, beyond the reception room, is the Exhibit and Collation Room, done in shades of brown, and adorned with bronze busts and oil portraits. Between the two is a modern tiled pantry with every appointment for prompt and efficient service, with a well equipped kitchen below.



Home of the Academy, 17 West Forty-third Street, from 1890 to 1926

HOSACK HALL

To the east of the entrance hall is Hosack Hall, the auditorium for the building, with its seating capacity of 700. This was the largest hall in the Academy's building at Forty-third Street, and is next to the largest in the present building. This hall carries out the original wishes of its donor, Mrs. Céline B. Hosack, who presented it to the Forty-third Street building in memory of her husband, Dr. Alexander B. Hosack. Dr. Abraham Du Bois was instrumental in bringing about the original gift. There is a lobby to Hosack Hall with walls of beautiful blue and gray veined Onondago marble, colors which harmonize with the decorations of the hall itself. The walls of the hall, the height of which is equivalent to two stories, are finished in tan stone effects, with high, round-arched windows on the north and south, the frames of which are surrounded with decorative sculptured borders. The keystone of the proscenium is a tablet with an inscription commemorating the donor of the hall; around the proscenium is the same type of decorative border that surrounds the windows. Figures from medical symbolism and allegory are combined in these with floral design. A good sized balcony at the back of the hall provides more seats and a moving picture operator's room is concealed behind the balcony. The draperies of Hosack Hall are old blue and gold brocade, and the carpet is in two shades of brown. The seats are upholstered in blue. Lighting is from chandeliers and from wall candelabra. Those who have seen this hall have commented upon it as the most beautiful of its kind in New York City.

On the second floor is the entrance to the balcony of the auditorium, the moving picture operator's booth, a large lecture room with moving picture screen and booth, dental amphitheatre, rooms for clinical demonstrations, patient's dressing rooms, and several section meeting rooms and offices.

The section meeting rooms are unique in their appointments for utility and up to dateness. Each is equipped with a slid-

Woerishoffer Hall, the General Reading Room of the Library

ing blackboard back of the speaker's platform, a cork wall board for attaching objects for demonstration, and a lantern for slides. Every provision for comfort is made, including upholstered seats, and all facilities supplied for clinical demonstrations and examination of patients.

THE LIBRARY

Practically the whole of the third floor is occupied by the library. The entrance is through the circulation department, a handsome hall with a dark panelled wainscoting and walls in tan paper-stippled effects. The charging desk, catalogue case, and other appointments are in walnut, and the floors of soundless compressed ground cork in shades of dark brown. In front of us as we enter is the doorway into Woerishoffer Hall, and beside it an inscription commemorating the donor. Woerishoffer Hall is the largest room in the new building and is the general reading room of the library containing the later volumes of the collection of bound periodicals. It is high-storied, with large arched windows, and handsome beamed ceiling painted with the same type of arabesque already described. At the windows are heavy brocade lambrequins in dull red and gold with tan inner curtains. The furniture here, as is the case throughout the whole building, was specially designed to be in keeping with the period, as well as to fulfill its various uses. There are large bronze standard reading lamps with tan silk shades on the long tables for readers. Across the centre of the hall is a double row of exhibit cases, now containing some interesting material from early medical Americana. The floor of the hall, and of the adjoining rooms, is of cork, with a border of white and verde antique marble.

With its outlook toward the west over Central Park is Farnam Hall, named in memory of Dr. Horace Putnam Farnam. This room is decorated similarly to Woerishoffer Hall, and contains the current periodical collection of the library, for the use of which it is equipped with readers' tables and wall and floor shelves. In addition to these two main reading rooms, the library contains a room for old, rare and valuable works; a room for medical history and bibliography; the Fellows' room, adjoining the circulation department, where members may retire to read, write, or smoke, and where they will find for their use the latest accessions of the library displayed on the shelves; the librarian's office; the assistant librarian's office; and the library cataloguing and work room.

The whole southeast section of the building, from the sub-basement to the top, consists of the book stack. This is in nine stories, with shelving of cast iron similar to that which is being installed in the new wing of the Library of Congress at Washington.

There is an electric elevator and book lift. The floors and stairways are of Kasota stone. The seventh, eighth and ninth stack floors are equipped with curtained study cubicles, each with its own window and radiator, table desk, chair and drop light. There are stairways at either end of the stack. One of the chief features of the stack is that it is not a fixed unit, but may be expanded to an almost indefinite capacity. It is so built, if desirable, eight additional stories may be added above, and an extension at the rear.

THE UPPER FLOORS

The third floor mezzanine consists of eight good-sized seminar rooms for members, equipped with tables, chairs, droplights, etc. Here members may work, confer, or have special typing or stenographic work done, a service which the Academy is planning to supply in the near future.

The fourth floor contains the offices of the New York State Medical Society, the American Otological Association, and the Association for the Relief of Widows and Orphans of Medical Men, section meeting rooms, and various offices.

The fifth floor houses the headquarters of the New York County Medical Society, The Physicians' Mutual Aid Society, the *New York State Medical Journal,* the First District Dental Society, and the Hospital Information Bureau, as well containing several section meeting rooms, offices, waiting rooms, etc.

The sixth and topmost story contains the administrative and executive offices of the Academy, including the office of the Director, the Committee on Medical Education, the Public Health Committee, and the Committee on Admission. It is also the headquarters of the Bureau of Clinical Information. On this floor is located also the Council Room, handsomely furnished and decorated, with walls of tan antiques and draperies, a rich ultramarine rug, and chairs upholstered in dull green materials. A smaller room, furnished similarly, is to be used for committee meetings, both by the Academy and other organizations.

On this floor are also the staff rest room, lavatory, kitchen and dining room, all comfortably and attractively furnished. The kitchen is equipped with a gas range, refrigerator, elaborate enamel kitchen cabinet, full set of dishes, and other conveniences. The telephone operator's office is also on the sixth floor, with a switchboard with fifty extensions in the building alone.

OTHER FEATURES

The building is completely fireproof, heated with steam and ventilated by the Univent System of ventilation. The hallways are spacious, well lighted, and have floors of Travatine terrazzo with gilt interlinings. The walls of the upper hallways and of the various offices are all in brush-stippled effects. There are lavatories, coatrooms, telephone booths, etc., on the various floors for the use of members and physicians in the building. The sanitary appointments are very complete, and are of the latest and most approved type, as well as handsome in appearance. There is a complete photostat equipment in the basement for the use of Fellows and physicians.

In order that their home may be a permanent one and at the same time keep pace with its own growth and with the progress of medical science the Academy has provided for expansion of its buildings in various ways. Additions may be made on top of the structure to as great a height as is permitted by the city (probably four stories). Four stories may be added on top of the auditorium wing. Eight additional floors may be added to the book stack, so that it may house in the future approximately a million books and pamphlets. Last, an extra plot of ground at the rear of the Academy has been purchased, and is to be used at present for the parking of cars, but may in the future be devoted, if necessary, to building purposes.

Now that we have passed in rather rapid review over all these utilities, beauties, and forms of service to humanity that are embodied in this new home of the New York Academy of Medicine, we are convinced that these men have even "builded better than they knew," and that their ideal, stated eighty years ago at that preliminary meeting of a few interested and faithful souls at Peletier's on lower Broadway, and kept steadfastly before the minds and hearts of their successors throughout the years, has borne rich and abundant fruit such as was not even dreamed of by those who planted the seed. Yet it is to them primarily, to those also who have cultivated the ground, and finally to the generous benefactors, who with their gifts have made dreams come true, that this great and beautiful monument to and source of unending service to humanity has been made possible to our Great City and the scientific world.

News Items.

Specialist in Pathology Needed at Iowa Hospital.—The U. S. Civil Service Commission states that there is a vacancy in a position of specialist in pathology at the Veterans' Bureau Hospital at Knoxville, Iowa, and that applications are being received for the position. The entrance salary is $3,800 a year. Promotion to higher grades may be made in accordance with civil service rules. Full information and application blanks may be obtained from the U. S. Civil Service Commission, Washington, D. C.

Columbia Medical Service to Be Extended.—Announcement has been made that Columbia University will build a medical service building, and, when facilities are available, that all students at the university will be required to undergo a medical examination. It has also been announced that the infirmary for men, equipped to care for 1,500 residing on the South Field Campus, will be moved to John Hay Hall, the new undergraduate centre on Amsterdam Avenue.

Dr. Welch Professor of Medical History at Johns Hopkins.—Dr. William H. Welch, senior member of the Johns Hopkins Medical Faculties, has been appointed to a full time chair in the history of medicine. This is the first endowed professorship of its kind in America. Dr. Frank J. Goodnow, president of the University, in making public a gift of $200,000 from the General Education Board for the establishment of the new professorship, stated that its purpose was to provide medical students with a cultural background which will make the young physician "more than a technical machine, competent to practice medicine." In order to give his whole time to his new work, Dr. Welch has resigned his position as director of the Johns Hopkins School of Hygiene and Public Health. Dr. William H. Howell, professor of physiology and assistant director of the school, will succeed Dr. Welch as director. Dr. Goodnow stated that Dr. Welch has been chosen to fill the new professorship "because of his intense interest in, and profound knowledge of, the historical background of modern medicine." Dr. Welch is considered to be without a rival in his acquaintance with the early period of American medical history, and the history of medicine in England from 1600 to the present day.

Dr. Charles Perilli to Succeed "Dr. John."—Dr. Charles Perilli has been appointed a trustee of Bellevue Hospital, to succeed his brother, "Dr. John of Little Italy," whose death occurred a few months ago.

Dr. Duel Entertains Building Committee.—Dr. Arthur B. Duel, chairman of the building committee of the New York Academy of Medicine, entertained at dinner on the evening of Monday, November 15th, the members of the building committee and those who have taken part in the erection of the academy's new building on Fifth Avenue and 103rd Street. The dinner was served, from the new and elaborately equipped kitchen, in the collation room on the first floor of the new building.

"The Doctors' Hospital."—Announcement has recently been made that 150 physicians and surgeons of New York are planning to erect a four million dollar hospital, which will provide also hotel accommodations for relatives of patients, on East End Avenue between 87th and 88th Streets, overlooking East River. The new institution, which may be called "the Doctors' Hospital," embodies an effort on the part of many medical men of the city to supplement the present inadequate hospital facilities for private patients.

It was announced that the new hospital will provide not only the best and latest medical, surgical and research facilities, but also the advantages of the most modern hotels.

Uptown Medical Centre Dinner.—Members of the Uptown Medical Centre Association held their second annual dinner on the evening of Tuesday, November 16th, in one of the construction buildings for the new medical centre at Broadway and 168th Street. Dr. C. C. Burlingame, executive secretary of the association, and Mrs. William Vanamee made addresses. Officers for the coming year were elected as follows: president, Mrs. William Vanamee; first vice-president, Colin Woodward; second vice-president, Frank Ritchings; secretary, Dr. Louis T. Wright; treasurer, J. Conrad Scheider. Educational, library, and flower committees were appointed to assist in the hospital work at the centre. It was announced that the association now has more than six hundred members, and that hereafter meetings will be held quarterly.

Appointments at the University of Pennsylvania.—Dr. George S. de Renyi, formerly of Budapest University, has been made assistant professor of anatomy in the School of Medicine of the University of Pennsylvania. Mrs. Carrie K. Bryant has been made assistant professor of microbiology and bacteriopathology in the School of Dentistry. Dr. de Renyi is the fourth new member of the department of anatomy this Fall. Dr. Eliot Round Clark was made professor of anatomy in September, and Dr. Roy G. Williams and Dr. J. C. Sanderson were made instructors. The appointment of Mrs. Bryant gives the School of Dentistry its first woman faculty member. She is the daughter of Dr. Edward C. Kirk, for many years Dean of the School of Dentistry and now professor emeritus of dental pathology and therapeutics.

Dinners Honoring Dr. Rivière.—Dr. A. Joseph Rivière of Paris was guest of honor at a number of social occasions during his recent visit in New York City. Among these was the dinner given by Dr. Victor C. Pedersen, former president of the American Electrotherapeutic Association, at the Delta Kappa Epsilon Club on November 12th. The other guests were Dr. Wendell C. Phillips, Dr. Samuel A. Brown, Dr. Walter L. Niles, Dr. Frederick T. Van Beuren, Jr., Dr. William P. Healy, Dr. Harlow Brooks, Dr. J. Milton Mabbott, Dr. James Pedersen, Dr. William Seaman Bainbridge, and Dr. Harry Eaton Stewart.

On November 9th, Dr. William Seaman Bainbridge entertained at dinner at the Union League Club for Dr. Rivière. Dr. Bainbridge stated in his remarks upon the occasion that the purpose of the dinner was to express the thanks of the Americans who had visited Paris for the hospitality extended, and as a tribute to Dr. Rivière's career in medical research. Among other speakers were Philip Bérier, French Deputy Consul. Johnson Mali, Belgian Consul, representatives of the Franco-American Societies and the International Medical Society, Augustus Thomas, the playwright, and Dr. Herbert Adams Gibbons. More than 150 guests attended the dinner. Dr. Rivière advocated the cooperation of France, Great Britain and the United States in forming an international army to enforce the "socalled League of Nations," declaring that disarmament would follow as a necessary consequence.

Society News and Notes.

Announcement has been made that the former West Side Clinicians have changed their name to the Schuyler District Medical Society. The newly elected officers are, president, Dr. John H. Morrissey; vice-president, Dr. Maximilian Lewson; treasurer, Dr. James V. Ricci; secretary, Dr. John A. Glassburg.

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The Pan-American Child Congress, embracing many organizations standing for child welfare, hygiene, education, etc., will be held in Havana, Cuba, February 13-20, 1927. It will meet in six sections: medicine, hygiene, sociology, education, psychology, and legislation. Twelve subjects will be presented in each section. Among topics to be discussed are psychiatric clinics for children, juvenile delinquency, child study laboratories, and the psychology of the preschool child. The Cuban congress will be the first of its kind ever held within convenient distance of the United States.

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Dr. Royal Whitman, of New York City, is in Chicago as the guest of the Chicago Medical Society at its meeting on December 1st.

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The Swiss Society for the Study and Protection of Song Birds is carrying on a campaign to stop the use by European hotels and restaurants of singing birds as an article of food. Italy and France are the worst offenders, it is said. Tourists are being urged to refuse to order any dishes made from songbirds.

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The First District Branch of the New York State Medical Society, at its recent meeting at Briarcliff Manor, elected the following officers for the coming year: president, Dr. Edward Cuniffe, Bronx; first vice-president, Dr. George Stanwix, Yonkers; second vice-president, Dr. Charles D. Kline, Nyack; secretary, Dr. Ralph O. Clock, Pearl River; treasurer, Dr. John F. Howell, Newburgh.

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The Hospital Information Bureau of the United Hospital Fund has, through its Convalescence Service, recently issued a directory of convalescent homes serving New York City and vicinity. The pamphlet includes a classified directory of such homes, an alphabetical list, and a list of projected convalescent homes. It may be purchased for a nominal price from the Hospital Information Bureau, 2 East 103rd Street, New York City.

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The Long Island City Medical Society at its recent initial meeting of the season elected officers for the coming year as follows: president, Dr. William B. Lavelle; vice president. Dr. James Dobbins; secretary treasurer, Dr. Mandel Weinstein.

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The American Electrotherapeutic Association and the New York Electrotherapeutic Association will give a dinner on the evening of Friday, December 3rd, at the Hotel Pennsylvania, New York City, in honor of Dr. Franz Nagelschmidt of Berlin.

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The American Association for Medical Progress has elected for its new president, Mr. George Murnane, vice president of the New York Trust Company. During the World War Mr. Murnane served as deputy commissioner of the American Red Cross in Europe. The retiring president, Dr. Thomas Barbour, director of the Museum of Comparative Zoology of Harvard University, continues his interest in the association.

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The Physicians' Square Club of Greater New York, composed of Master Masons, will hold its annual dinner, entertainment and ball at the Hotel Astor, New York City, on Sunday evening, December 5th. Tickets may be obtained from Dr. J. Rosenberg, 120 East 86th Street.

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At the close of a luncheon given recently by Samuel W. Reyburn in New York City, fifty business men pledged their aid in raising the second half of the one million dollar endowment fund of the American Society for the Control of Cancer.

Abstracts from Current Literature

CARDIOVASCULAR DISORDERS

Auricular Fibrillation and Auricular Flutter.—C. W. Curtis Bain (*Clinical Journal,* October 13, 1926) says that both flutter and fibrillation are apt to be accompanied by heart failure, and in the treatment of any particular case, rest in bed, the administration of atropine and morphine, the use of diuretics and the advisability of bleeding would have to be considered. As the treatment of heart failure does not come within the scope of this paper, mention will be made only of those drugs useful in restoring normal rhythm and in controlling the rate. Of the digitalis group the tincture of digitalis or Nativelle granules, if more convenient, by the mouth, and strophanthin intravenously, are useful. The only object in using strophanthin is to obtain an effect quickly, and this is outweighed in most cases by the fact that individuals vary considerably in their reaction to the digitalis group, and so the dose is always doubtful. In all but the most urgent cases, therefore, the slower but more certain method of giving digitalis by mouth is preferable.

In treatment of flutter a dram of the tincture is given daily in three doses. Usually within two days the pulse becomes slower and irregular. The digitalis is continued until the rate falls below 80. If careful watch be now kept, it may be noticed that the pulse has become totally irregular and that the auricles are fibrillating. If digitalis is stopped, normal rhythm will commonly return spontaneously. If it does not return the rate can be controlled with an appropriate dose of the drug.

In the fibrillation of mitral disease with an acute onset and heart failure, a dram or a dram and a half is usually given at once, and is followed up by the same amount daily until the apex rate is below 80. It is then stopped until the rate begins to rise, when half doses are given and continued indefinitely.

Eccleston advocates massive doses of digitalis—six drams of the tincture during the first twenty-four hours. This is unsafe if the patient has had digitalis before, and does not appear to have any advantage over intravenous strophanthin. With the slower method any intolerance to the drug will show itself by bigeminy of the pulse—the digitalis coupling—a diminution of the amount of urine, or by nausea in time to stop the treatment before serious consequences result.

To determine the correct amount to be taken for the future Strickland Goodall uses the following method: The difference between the apex rate and the pulse rate, which always obtains in fibrillation, is due to the fact that some beats fail to open the aortic valves and so reach the wrist. These beats represent wasted energy, and the fewer there are the more economy is there in the work done by the heart. The patient is therefore put to bed and given digitalis until the apex rate is down to below 70. Digitalis is then stopped and the apex and pulse rates taken lying down and standing three times a day until the rate is above 80. With a graph so obtained it can be seen at which rate the apex and pulse most closely approximate. This is the optimum rate for the patient, and the dose is regulated to bring him down to it.

In some patients the supracardiac nervous control still predominates in spite of their fibrillation, and their rates may fluctuate considerably from emotional causes. In these bromide is quite as important in the treatment as digitalis. In the degenerative form with a slow rate digitalis is usually unnecessary. In the toxic and paroxysmal forms it is a matter for serious consideration whether digitalis should be given at all. Most cases have a definite cause, the removal of which will allow the fibrillation to be brought to an end. Digitalis tends to perpetuate fibrillation, and the alternative treatment of quinidin must be borne in mind.

With regard to quinidin therapy there are two schools of thought. One points out that quinidin is a general cardiac poison, that there is never any guarantee of success from its administration, and that where it has succeeded it must be continued in order to prevent a relapse, and will do more harm to the ventricle than can be compensated by the restoration of normal rhythm. The other maintains that fibrillation in itself limits the powers of the heart; that where normal rhythm has been regained with quinidin an increased exercise tolerance is shown by patients still taking the drug compared to what they could do while fibrillating and under digitalis; and that the percentage of failures would be considerably diminished were greater discrimination shown in the selection of cases. For a case to be suitable the fibrillation must not be of long standing and the heart must not be enlarged.

There are two standard methods of administering quinidin, though other modifications are used. One is to give three grains to test for any susceptibility, and after a few hours five grains every two hours until the arranged limit.

In toxic fibrillation, whether due to hyperthyroidism or not, where the source of toxemia can be eliminated by operation it seems reasonable to make an effort to restore normal rhythm after the operation, since the risk of a relapse should not be great. This principle might be applied to certain rheumatic cases with septic tonsils.

In the degenerative type quinidin will seldom be useful. It is not often that cases are seen soon after the onset, and the heart is usually enlarged.

It is in the mechanical type that opinions differ the most. There is little hope at present of diminishing the obstruction to the mitral valve, and no one expects that normal rhythm will persist more than a few years. Those that use the drug claim that during that period the patient can do more, feels better, and is grateful for the improvement in his condition.

In flutter there is always the alternative method of giving digitalis, which may itself bring about the restoration of normal rhythm. It would seem best to give quinidin either at the onset of the attack in the hope of a rapid termination, or else to restrict its use to those occasions when digitalis has failed. One possibility should be borne in mind; since quinidin slows the circus, it lessens the number of impulses passing down to the ventricle. Should these be reduced to about 200 the ventricle may respond to them all. While this is not so severe as in the untreated case, since the rate is slower, there is always an element of danger about it, and it is a sign to stop the drug.

Cardiovascular Symptom Groups in Colitis and Appendicitis.—J. Baumann and P. Martin (*Bulletin de la Société des sciences médicales de Montpellier,* January, 1926) allude, in the first place, to a combination of anemia and low blood pressure resulting from severe colitis, diarrhea of the dysenteric type, amebic dysentery, etc. About seventy per cent. of the cases are due to chronic appendicitis or typhlocolitis. In acute cases, the red cells may drop to two or three millions, while in chronic cases there is a less pronounced anemia which shows aggravation after each recrudescence of the colitis. With the anemia occur lassitude, general depression and apathy, sometimes accompanied by slight jaundice, the urine remaining, however, free of bile, while the anemia yields to treatment of the bowel. Low blood pressure is the most constant manifestation, and may be pronounced; ordinarily the systolic pressure is between 90 and 100 and the diastolic between 50 and 70. The commonest heart symptom is a tendency to syncope; occasionally there are arrhythmias or bradycardia. Loeper, in such anemias, found diminished resistance of the red cells and the presence of a hemolytic agent in the blood serum. This type of disturbance is limited to the relatively recent cases of colon disease, which are still subject to subacute, febrile recrudescences with pain definitely localized in the right side of the large bowel. The stools show, singly or in combination, the colon bacillus, the enterococcus or, less commonly, the perfringens or paratyphoid organisms. The first two of these organisms are now known to have marked hemolytic properties. In contrast to this symptom group attended with nervous disturbances of toxic origin and a tendency to vagotonia is another symptom group featured by high blood pressure and sympatheticotonic manifestations. In this class of cases the patients are elderly and the stools bacteriologically negative. The intestinal lesions are no longer in an active state, the patients retaining as a result of their earlier colitis or appendicitis, merely sequelæ such as relaxation of the intestinal muscular layer and marked dilatation of the cecum. Through cecal stasis there are present putrefaction of the incompletely elaborated food proteins, carbohydrate fermentation, mucous hypersecretion, retention of the products of desquamation from the mucosae, and increased toxicity of the urine, which

is rich in indol, skatol and hydrogen sulphide. The tongue is coated and the breath malodorous. The colitic symptoms differ little from those of the first group, consisting of alternate diarrhea and constipation, and malodorous stools. The pain, however, is less definite, being localized in the nervous plexuses. There are no appreciable recrudescences. The blood pressure varies at different times, the systolic being usually between 160 and 200 and the diastolic between 80 and 90. Dizziness, insomnia, headache and sometimes trophic or cutaneous disturbances are complained of. Colonic lavage by the drop method, administered in four or five "detoxicating" courses at a suitable watering place in each season, is followed by a reduction of blood-pressure. On the other hand, in permanent hypertension due to renal or valvular disease or arteriosclerosis, such treatment is without result.

Coronary Occlusion in General Practice.—Sylvester F. McKeen (*Boston Medical and Surgical Journal,* May 6, 1926) says that coronary occlusion is not a rare disease in general practice. The diagnosis is generally easy, the treatment is plainly indicated, and the prognosis is fairly hopeful. From the viewpoint of treatment, it is highly important to distinguish it from the ordinary angina of effort, from the different acute affections of the upper abdomen, and from those doubtful conditions often described in the newspapers as acute indigestion, ptomaine poisoning, etc. The picture of a typical case should be kept clearly in mind. A man, around middle life is suddenly stricken, perhaps in his sleep, with an intense substernal or epigastric pain that lasts and is not relieved by nitrites or even by ordinary doses of morphine. Signs of grave shock are present, anxious facies, ashy color, clammy skin and rapid, feeble pulse. The heart sounds may be irregular or tic tac in quality. A pericardial rub is sometimes found, and is then pathognomonic. The blood pressure is comparatively low, and, if previous readings are known, a decided drop has evidently occurred. The temperature will probably be found elevated, and the leucocytes are increased. A patient with such symptoms should be put to bed, and made as comfortable as possible with opiates. If the insult to the heart be not too great, he may survive the immediate shock. If he is kept absolutely quiet in bed for at least six weeks, with good nursing the infarct is given the best chance to heal, and the patient the best chance to recover. Moreover, if he has been a sufferer from chronic angina, and hypertension, he may be relieved from both by his coronary occlusion.

Casein of Milk (Curd) as a Diuretic.—A. Jarotzky (*Schweizerische medizinische Wochenschrift,* March 13, 1926) proposes an improvement upon the Karell milk diet in patients with heart disease. Curds are contraindicated in cases with nitrogen retention in the blood. The indications for the casein of milk are the following:

1. In the severe cases of cardiac insufficiency, in which all of the usual cardiac remedies and diuretics have failed to exert a favorable influence. For three days the patient should be given daily 600 to 800 gm. of curds with 100 to 200 gm. of sugar and 100 gm. of sour cream. During these three days the patient must not drink anything and take no fluids at all. Only with this precaution is success possible.
2. The casein of milk (curds) must generally be used in cardiac decompensation in place of milk to a great extent.
3. The use of casein with the exclusion of the administration of all fluids is indicated in all those cases where at the present time only mercurial preparations are being used for diuretic purposes. The casein treatment may also be used in place of calomel.

Relations Between the Concentration of Blood Corpuscles in Venous and Capillary Blood and the Blood Pressure of Diabetic Patients.—Howard F. Root, J. W. Thompson, and R. R. White (*Journal of Laboratory and Clinical Medicine,* February, 1926), compare the relative concentration of corpuscles in capillary and venous blood of twenty-seven diabetic patients in the morning and evening. Variations in arterial tension between these periods do not correlate constantly with any change in the corpuscle concentration. In certain patients, with high diastolic blood pressure, the capillary count (red) was higher than the venous red count at night but lower in the morning. This reversed relation suggests capillary stasis at the end of the day and was more marked in patients with obvious vascular disease. Increases in venous pressure produce the contrary effect; namely, high venous count and low capillary count. The desirability of further study is pointed out. Comparisons of the relative concentration of corpuscles under varying conditions of arterial and venous pressure by means of the hematocrit should be made in cases of rheumatic heart disease, vascular hypertension and edema of cardiovascular origin.

Incipient Valvular Endocarditis as a Clinical Concept.—A discussion is presented by Dr. Nicholas Lukin (*Archives of Pediatrics,* May, 1926) on the pathology and healing process of valvular endocarditis. The possibility of early arrest and limitation of its progress is stated. The author urges the formation of a clinical concept of incipient valvular endocarditis with tonsillitis as a primary etiological factor in order to stop or limit the disease at an incipient stage. The insertion of a special chapter on incipient valvular disease in textbooks is suggested.

SYPHILIS

When May One Speak of the Cure of Syphilis?—Charles Fouquet (*Urologic and Cutaneous Review,* July, 1926) says that there does not exist as yet one single clinical or laboratory sign capable of certifying that an individual once tainted with syphilis is definitely free from his affection. This is not to say that syphilis is not curable. Almost all syphilologists admit that the cure of this disease is possible. Syphilis treated energetically at the prehumoral stage in particular gets well almost always.

If we have not the scientific proof permitting us to deliver to an individual a certificate of the cure of syphilis, we have nevertheless often a group of clinical and laboratory signs which constitute, when they are taken together, an important array of presumptions, permitting the belief that recovery has been obtained. This is the case of those syphilitics in whom the infection dates back many years who have not presented any symptoms for several years, who have had a certain number of negative blood seroreactions during two or three years and who have persistently a normal cerebrospinal fluid. It would appear that one could permit marriage and procreation to such as these.

Mixed Chancre.—Lucien Perin (*Urologic and Cutaneous Review,* July, 1926) applies the term mixed chancre to all of the syphiliticochancroid symbioses and he describes them according to the period of evolution of syphilis at which they manifest themselves, as 1, mixed primary chancre; 2, secondary or secundotertiary mixed chancre, and 3, tertiary mixed chancre.

These different forms have a variable pathogenesis. In primary mixed chancre there is a direct inoculation at the same point with the treponema pallida and the bacillus of Ducrey. This inoculation is simultaneous or successive, but in general it presupposes a terrain previously free from syphilis. The secundotertiary or tertiary mixed chancre is, on the contrary, always conditioned upon a previously syphilitic terrain. Here there is produced a veritable syphilization of the chancroid comparable to that which occurs in syphilitic terrain. Here there is produced a veritable syphilization of the chancroid comparable to that which occurs in syphilitic subjects following trauma or diverse injuries. To this group belongs the papulous soft chancre, ulcerous tertiary chancre, tertiary phagedenic chancre, etc. More rarely the secundary or secundotertiary mixed chancre results from the inoculation of the Ducrey bacillus upon the site of a secondary or secundotertiary lesion in full activity.

When the inoculation with the Ducrey bacillus and the spirochete is simultaneous, on the second day after contagion there appears at the site of inoculation a chancroidal vesicopustule which develops little by little and towards the tenth day gives place to a typical soft chancre. The ulceration is covered with yellow pus, underneath which appears an irregular base with small well like depressions and hemorrhagic islets. The borders are irregular and curve sharply. The base is soft; adenopathy is absent or slightly marked. Sometimes small ulcerations on the back of the penis and an inflammatory adenopathy complete the clinical picture. The Ducrey bacillus may be found in the pus. Toward the twentieth or twenty-fifth day the ulceration changes its character and the syphilitic chancre makes its appearance with the following symptoms: The ulceration becomes more regular, less broken, the floor tends to be raised and to become papulous; the borders are effaced; the purulent secretion diminishes; the base is infiltrated and assumes a hard consistence, sometimes cartilaginous. Some of the glands become hard, without inflammatory character, grouped like satellites around a large ganglion and consti-

tute the type of syphilitic adenopathy. The induration at the base is subject to variation, its intensity varying according to the stage of evolution of the chancroid. In the latent forms of mixed chancre syphilis is frequently unrecognized until the appearance of secondary symptoms.

When the inoculation with Ducrey's bacillus and with the spirochete is successive, two alternatives present themselves: 1, The patient having a syphilitic chancre subjects himself to a new chancroid contamination, or 2, the patient has a simple chancroid and contracts a syphilitic chancre.

In the first stage of the first alternative, the syphilitic chancre shows the usual superficial erosion, without borders, not painful, regular, rounded in form, red at the bottom, not suppurating, indurated base accompanied by a characteristic hard, indolent adenopathy. The spirochete finding and even the Wassermann blood reaction may be positive. The chancre shows changes from the second day: on the regular bottom appear little well shaped depressions, small ecchymotic spots appear, the borders grow in all directions and the ulceration continues more or less deeply, irregularly cut out. The base of the ulcer suppurates and becomes painful. The glands assume an inflammatory character, sometimes even suppurate. Lymphangitic abcesses develop and give place to chancroidal ulcerations after spontaneous rupture. Autoinoculation is positive with the pus of the ulceration or bubo or lymphangitic abscesses.

The second alternative is less common because the chancroid is generally painful, preventing intercourse. The resultant mixed chancre differs in no way from that of simultaneous inoculation except in the longer lapse of time between the beginning of the chancroid and the appearance of the chancre.

The term mixed bubo is applied to the association of syphilitic bubo and chancroid bubo. The former is constant with mixed chancre, the latter is observed less often.

The diagnosis has two essential points: the recognition of syphilis at the commencement of its appearance, and the recognition of the chancroid. The diagnosis of syphilis is the most important. In fact, every chancroid should be suspected and in the presence of the most characteristic chancroid one should always think of the possibility of the appearance later of a syphilitic chancre. The sources of error are rare: 1, the soft nodular chancroid which accompanies a nodular induration; 2, therapeutic indurations produced by cauterizations and topical remedies. The diagnosis of syphilis is made from the findings of a positive spirochete or the Wassermann reaction (later). On the other hand, one should suspect the coexistence of chancroid in the presence of every syphilitic chancre with an ulcerative or phagedenic tendency, and in the presence of every syphilitic chancre accompanied by inflammatory adenopathy or lymphangitic abscess. Repeated examinations for the Ducrey bacillus may be necessary. Where this bacillus cannot be found, autoinoculation may be tried.

The treatment of the syphilis is that usually practiced in uncomplicated cases. Two reservations should be followed in the treatment of the chancroid: Not to use any process of cauterization susceptible of producing artificial induration; not to use any local treatment preventing the direct examination for the spirochete.

Some of the Medicosociological Aspects of Syphilis.—Arthur M. Barnett (*Urologic and Cutaneous Review*, July, 1926) suggests the following procedure in the handling of early cases of syphilis, namely:

1. That all lesions of the external genitals should be regarded as syphilitic until proved otherwise.

2. That no physician however skilled should regard himself competent to make a clinical differential diagnosis between chancre and chancroid by observation alone.

3. That all lesions of the external genitals should be subjected to repeated dark field illumination with the aim of isolating the infecting organism; failing to do so, the Kahn microscopic test should be made with serum from the lesion, as well as a Wassermann test with scrapings and serum from the lesion.

4. That after the appearance of the lesion a Wassermann blood test should be made every three or four days for the first three weeks, and once a week for the next two months, before the patient is dismissed.

5. That all patients presenting lesions of the external genitals should be hospitalized until a definite diagnosis is made, and in the event of a diagnosis of syphilis, at least three doses of arsphenamin administered, thus rendering them sufficiently noninfectious to permit them to safely mingle in society, with instructions to continue treatment in the out patient department of the hospital or to place themselves under the care of private physicians.

6. That any physician observing lesions of the external genitals owes it to his patients to make an early diagnosis, and in the event of his not being equipped to do so he should refer such patients to an institution or some private physician equipped to do this work.

Peroral Novasurol Therapy.—The methods of administering novasurol as practiced heretofore have been found to be unsatisfactory therapeutically and were not well borne by the patient. Only after novasurol powder was given in hardened gelatine sapsule were any therapeutic effects observable in cardiac dropsy. With this method the recurrence of edema and the development of hydrops are avoided. Paul Saxl (*Wiener klinische Wochenschrift*, July 8, 1926) administers the novasurol in gelatin capsules, each containing 0.2 gm. novasurol. As a rule, these capsules are well borne; there may be some gastric disturbance two hours after taking it, but this is only transitory and no serious disturbances of any kind were observed. The capsule is usually given after breakfast. The usual oral hygiene is instituted.

The usual novasurol injections may be given for years, but as soon as these are discontinued the patient always goes into a very serious condition. The peroral method of administration, however, makes it possible to allow intervals of treatment and also provides a more marked dehydration; it prevents the recurrence of the accumulation of water in the tissues in entirely or almost completely dehydrated cases of hydrops. The beneficial effect is noticeable particularly in cases of heart disease, in which cases, naturally, the activity of the heart must be maintained at its maximum efficiency by means of digitalization.

The contraindications include renal insufficiency, excessive hypertension, anemia, cachexia, fever and diarrhea.

Syphilis of the Nervous System.—W. H. Mayer (*International Journal of Medicine and Surgery*, 39:4) classifies the types of neurosyphilis as follows: 1. The milder manifestations of neurosyphilis, such as the ocular palsies and coincident visual disturbances; 2, the convulsive type; 3, the hemiplegic type; 4, tabes dorsalis; 5, the paretic type, and 6, asymptomatic cases with positive laboratory findings.

Of the treatment of these various types he says that he cannot urge too strongly against the treating of a positive Wassermann instead of the patient, for it must be remembered that basically the Wassermann is the indication of the immunity reaction of the patient. Salvarsan is itself an intense nerve poison and its administration should be guarded where any evidence of acute inflammation of the meninges is present.

Many cases of neurosyphilis do well on small repeated doses of salvarsan, especially those with mild tabetic pains or with radicular symptoms, but the author believes that salvarsan itself renders the individual noninfectious, but it does not cure syphilis.

Bone Syphilis.—Frederick H. Dillingham and Lawrence K. McCafferty (*American Journal of Syphilis*, July, 1926) state that one may conclude that when syphilis of the bone exists for any length of time we not only get periostitis, but at the same time we frequently get various phases of bone pathology, such as sclerosis, rarefaction and osteomyelitis. It is only at the beginning of bone syphilis that we see the wavy, irregular line of the periosteum which almost always means syphilitic periostitis. We see this picture so frequently that one may lose sight of the fact that syphilis may also cause other definite lesions. We should not wait until the bone shows marked involvement, but should be on the lookout for syphilis at the first sign of nocturnal pain. We should not treat too lightly the "aches and pains" of middle life but should attempt to assign a definite cause rather than to classify them all under the term neurasthenia, rheumatoid, etc. A roentgenogram should always follow a negative Wassermann in persistent nocturnal pains whether or not the history is suggestive of syphilis. As is commonly known, the Wassermann reaction is not always positive in late syphilis. The roentgenologist may not be able always to definitely differentiate bone syphilis from tuberculosis and other diseases of the bone, but he can frequently aid us in arriving at a tentative diagnosis. At times it may be necessary to resort to the therapeutic test, but this is infrequent.

DIABETES

Effect of Exercise on Insulin Action in Diabetes.—R. D. Lawrence (*British Medical Journal,* April 10, 1926) found that the immediate effect of exercise in increasing the fall of blood sugar caused by insulin is very great. This occurs only during the maximum period of insulin activity—that is, from one to four hours after the injection. Severe and prolonged exercise and half the dose of insulin may produce as great a fall of blood sugar as the usual dose without exercise.

Besides the immediate fall of blood sugar, exercise causes insulin to burn more carbohydrate than usual and to deplete the body stores of carbohydrate. For this reason the dose of insulin succeeding exercise has often an unusually powerful effect in producing hypoglycemia.

If the diet is kept constant, an increase of exercise over days and weeks allows a reduction of insulin to be made. This is one of the reasons why the dose of insulin can often be reduced early in the treatment when patients leave the hospital and adopt a more active existence. If this reduction is not made symptoms of hypoglycemia appear. When the added exercise is omitted the insulin must be raised again.

It should be the object of all treatment to enable a diabetic to lead a normal and varied life, and to forget all about his disease except at meal times. Accordingly allowances must be made for the changing conditions that may arise in life. Patients should and do easily learn to reduce their insulin before unaccustomed exercise or activity, or they must take vigorous exercise only at times when the effect of their injections has worn off. Even after exercise, when the usual carbohydrate stores have been partially depleted, it is usually advisable to reduce the next dose of insulin. If exercise is increased over days or weeks it is obviously more physiological to increase the diet instead of, or as well as, reducing the insulin. The increased calorific output must ultimately be balanced by an increased intake, otherwise weight and energy will be lost. A diet which supplies thirty calories per kilogram of body weight may be a sufficient "maintenance" diet for a sedentary life, but forty calories may not be too much merely to maintain the requirements of a more active existence.

Biochemical Rehabilitation of Diabetics.—W. J. Mayo (*Annals of Surgery,* 84:2) says that progress in the surgical treatment of patients with diabetes has come, not so much through improvement in technic, as in the preoperative care of the patient, in the attention to such small matters as the care of the feet, the prevention of skin infections, and in the intelligent use of diet, insulin and glucose.

The test for the amount of sugar in the urine as a guide to the severity of diabetes has largely given way to a test for sugar in the blood. Sugar in the blood is a threshold substance. The threshold varies greatly in height in different persons. When the sugar exceeds a certain level, so to speak, it flows over the top and appears in the urnie. A person with a low sugar threshold may have glycosuria after eating an unusual amount of carbohydrates, such as candy, and yet not become afflicted with diabetes. Another person with high sugar threshold may have no sugar in the urine, but an excess in the blood, which in cases of slight infection may cause serious disturbances. Even study of the sugar in the blood may fail to tell the whole story. Sugar is stored in the liver and other tissues as glycogen, which is merely a condensation product of glucose.

If pancreatitis accompanies infection of the gallbladder, it does not take the form of atrophy of the pancreas and of the islands of Langerhans, rather characteristic of diabetes. On the contrary, the changes in the pancreas, as a result of biliary infections are usually of the type called chronic pancreatitis, enlargement and thickening. Removal of the infected gallbladder in the presence of chronic pancreatitis may be followed by improvement in the diabetes, but such a favorable result is not obtained with sufficient frequency to justify operating, in the hope of curing the diabetes, on a gallbladder suspected of being diseased. At least it is a comfort to know that diabetes is not necessarily a contraindication to an operation for definite disease of the gallbladder.

It has been a common experience in cases of diabetes, that when there is arteriosclerotic gangrene of the lower extremities, which necessitates amputation of part of the limb, great improvement in the general condition of the patient with a reduction in the symptoms of diabetes may take place after the amputation. Joslin is wise in his advice to amputate the leg above the knee in cases of the acute, florid type of diabetic gangrene when there is discoloration of the entire foot and ankle without a line of demarcation, and high temperature. He emphasizes the fact that care of the feet, next to a proper diatetic regimen, is the most important measure in the treatment of diabetes. A patient with diabetes should wear several pairs of shoes in succession. The trimming of corns and calluses should be regarded as a serious operation, to be done under antiseptic precautions, in the morning rather than at night, so that all swelling and edema in the muscles about the foot from the day's usage will have disappeared.

The use of the actual cautery to destroy carbuncles is extraordinarily efficacious. It has been used in the clinic successfully for many years for all forms of carbuncles, both in the patient with diabetes and the patient without diabetes. The dark red heat of the soldering iron is best, and with it the entire area of the carbuncle is converted into an eschar. The eschar is left without a dressing, and the dry treatment for burns is applied. If necessary, an electric fan is used to keep the surface dry, and dry powdered boric acid may be rubbed in to absorb moisture. When the slough begins to separate, the usual applications of antiseptic wet dressings are made. Astonishing results are seen in cases of severe carbuncle. The patient suffering with pain and high temperature, within a few hours after the cautery treatment is quite comfortable and up and about with normal temperature.

Interpretation of Sugar Tolerance Tests; the Common Occurrence of Renal Glycosuria.—Herman O. Mosenthal (*Medical Clinics of North America,* November, 1925) proposes the following classification of blood sugar curves, based on the ideas that the normal fasting blood sugar should be 120 mg. or less, that after the administration of 100 gm. of glucose the blood sugar should not rise above 160 and that the blood sugar should return to 120 mg. or less within two hours; any curve in which the blood sugar rises above 160 mg. is termed a "high curve"; any curve which lasts longer than two hours is designated as "prolonged." Those curves are regarded as "low" in which at no time during the period of observation the blood sugar rises above 120 mg. per 100 c. c. Such low curves exist in normals and in pathological conditions are helpful in diagnosis, as in hypopituitarism.

Every case of diabetes mellitus exhibits a high prolonged curve, though there are very many conditions in which a high prolonged curve is not associated with diabetes mellitus. Many persons in whom intermittent glycosuria occurs, that is not readily diagnosed as diabetes mellitus, do not suffer with this disease; among such cases an extraordinary number of instances of renal glycosuria is found.

Renal glycosuria may be an acquired functional disturbance; the author's series of observations bears out those who believe that renal glycosuria is a harmless anomaly and bears no relation to diabetes mellitus.

Uremic Death in Diabetic Coma.—P. Merklen, M. Wolf and P. Bicart (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* March 11, 1926), describe a case of diabetic coma in which insulin reduced the blood sugar from 5.3 to 1.2 grams, caused the glycosuria to disappear and greatly diminished the acidosis; meanwhile, however, the output of urine dropped, albuminuria increased, with many casts in the urinary sediment, and the blood urea rose to one gram and later to 1.3 grams. The general condition grew worse, and the patient succumbed with rapidly progressive manifestations of renal failure, in the face of the improvement in the diabetic symptoms. The case illustrated the fact that some cases of diabetic coma are not saved by insulin, but die of a superadded uremia. Hence the unfavorable prognosis emphasized by some writers for cases of diabetic coma in which the blood urea is high. Death occurs in these cases even before the blood urea has reached two grams. With Ambard and others, the authors account for the unexpected deaths in that acidosis is capable of rapidly inducing lesions of the kidneys, which persist after disappearance of the acidosis. The prognosis of diabetic coma treated with insulin depends not only on the course of the blood sugar and ketone bodies but also on the renal condition as reflected in oliguria and anuria, progressive albuminuria, casts and elevation of blood urea. The latter should be estimated at short intervals; if it is rising, the prognosis is bad and if falling, more favorable.

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Medicolegal Notes.

PROCEDURE UNDER NORTH DAKOTA STATUTE AS TO REVOCATION OF LICENSES

The North Dakota Supreme Court holds, In re Shortridge, 207 N. W. 442, that a proceeding before the state board of medical examiners, upon a complaint against a physician for the purpose of revoking his license, is administrative, not judicial. The state may prescribe the conditions under which a person may be permitted to hold himself out to the public as a qualified physician and surgeon; it may give a board the power to grant and revoke licenses to practice medicine on grounds prescribed by the law. Ordinarily the courts will not interfere with the action of such a board except in cases where it has acted arbitrarily, or threatens to act under statutes purporting to give arbitrary power to deprive a person of the valuable right to practice his profession.

It was held that the licensee was not entitled to a new trial in the district court, with the right to introduce new evidence, the North Dakota statute dealing with the subject of revocation of licenses, Comp. St. 1913, §468, clearly contemplating that the trial in the district court shall be upon the record transmitted by the board of medical examiners and the evidence upon which that tribunal based its findings and conclusions. There is no suggestion in the statute that there shall be a new trial in the district court, with the right to offer new evidence, or, perhaps, raise new issues. The statute simply allows an appeal upon the record as made by and before the board. Manifestly, the right of review thus accorded is amply sufficient to protect the physician's right to due process, and to ensure against arbitrary action by the board depriving him of substantial legal rights.

BURDEN OF PROOF OF AVAILABILITY OF X RAY APPARATUS

The Wyoming Supreme Court holds, Wright v. Conway, 242 Pac. 1107, that, in a malpratice case, the facts that an x ray apparatus was available and used four weeks after the diagnosis and commencement of the treatment of a broken femur did not justify an inference that the same instrument was available at all times before that, including the time of the diagnosis and beginning of the treatment, especially in view of the fact that if such a machine was available the plaintiff was in a situation at the time of the trial to have shown the fact by his expert witness. To have thrown the burden upon the defendant of showing that he could not secure an x ray at the time when it was charged to have been negligence not to use it would have placed upon him the burden of proving that he was not negligent, which is not the rule in malpractice cases. The court refused to hold, without evidence, that x ray instruments are so commonly used by physicians in communities like Cheyenne, Wyo., where the defendant practiced, as to justify an inference of availability on that ground alone, especially as defendant had testified that he could not get a machine and could not take the patient to one. There was, moreover, insufficiency of proof of any causal connection between such failure to use x ray and the subsequent injury for which damages were claimed.

PROCEDURE UNDER CALIFORNIA MEDICAL PRACTICE ACT, SECTION 14

The California District Court of Appeal, First District, holds, Grisso v. Board of Medical Examiners, 242 Pac. 912, that the provision of section 14 of the California Medical Practice Act, as amended by St. 1921, p. 1012, for an appeal from an order of the state board of medical examiners revoking a physician's license, to the superior court of the county where the revocation was made, is unconstitutional, and that certiorari or writ of review is the proper remedy. On application for such a writ of review the court need only determine whether the state board acted according to section 14, as amended, which makes provision for revocation by the board, outlines the procedure and sets forth the causes for revocations whether the board had jurisdiction over the defendant, and whether a hearing was had and evidence supporting the charge was adduced at that hearing. The board's power under this section has been repeatedly upheld in California courts. The filing by a physician with a county clerk of a certificate provided for by section 2466, California Civil Code, stating that he was the sole owner of "Bohannon Cancer Institute," and was doing business under that name was held to be a violation of section 14, subd. 8, as amended, in which the use by a physician and surgeon of a fictitious name, or any name other than his own, is declared unprofessional conduct, so as to authorize the revocation of his license.

CHARITABLE HOSPITALS DUTY IN SELECTION OF ITS AGENTS

The Washington Supreme Court holds, Tribble v. Missionary Sisters of the Sacred Heart, 242 Pac. 372, that merely because a hospital receives or exacts compensation from those desiring its privileges to the extent of their ability to pay does not necessarily deprive the institution of its character as a charitable one.

After an operation in such a hospital, a patient, while still under the influence of an anesthetic, was taken to his room and placed in bed. His attendant or attendants neglected to remove an aluminum bottle of hot water which had been placed in the bed, and which in a short time severely burned him. He sued the hospital, alleging negligence in its care of him and in the selection and retention of the person assigned to take care of him. It was held that a charitable hospital is liable for injuries arising from failure to exercise due care in the selection of its servants. Whether the hospital was negligent in the employment of a probationer nurse who, it was claimed, caused the injury, was held, under the evidence, to be a question for the jury.

OPINION EVIDENCE AS TO MENTAL CAPACITY TO EXECUTE WILL

In a will contest case a medical witness for the contestants was allowed over objection to answer a question as to whether the testator had mental capacity to understand or carry on a business transaction. The Texas Court of Civil Appeals holds, Curtis v. Adams, 275 S. W. 206, that the objection should have been sustained. The court said, in part: "In the trial of cases of this character it is permissible for a witness, who is qualified, to state whether in his opinion the mind of the testator is sound or unsound; but he cannot give his opinion as to the mental capacity of the testator to perform the act then under investigation. When stripped of its surplus verbiage, the question asked of Dr. Millan was: Did the testator have mental capacity to conduct a business transaction? The only business transaction the parties then had in mind, and to which this question could have any reference, was the execution of the will in controversy. The answer was, in effect, the opinion of the witness on the very issue which the jury or the court was called upon to decide."

OPINION EVIDENCE AS TO CAUSE OF INJURY

The Missouri Court of Appeals holds, Duvall v. Brooklyn Cooperage Co., 275 S. W. 586, that any hypothetical questions to a doctor should not call for his opinion as to the possibility of an injury resulting from certain causes, but should require him to state if, in his opinion, such injuries would result from such causes to a reasonable degree of certainty.

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Unrecognized Nasal Sinusitis*

IRVING WILSON VOORHEES, M.S., M.D.
New York

This little paper is not written for the rhinologist of experience, but for that very large group of physicians in other fields who are unfamiliar with important facts here set down.

Every sinus disease begins as a complication of purulent rhinitis. First, there is the socalled cold in the head with sneezing and watery discharge. Two or three days later the watery discharge becomes purulent. If not copious in amount, pus is probably being formed in the Schneiderian membrane covering the septum, turbinates and general nasal interior. This condition lasts about one week only and the cold clears without "going down on the chest," into the ears or into the nasal sinuses. In other words, a simple disease has been well taken care of by the natural defenses of the body, and therefore has been quickly thrown off. Such a condition is properly described as an acute purulent rhinitis simplex. Not much attention is paid to it by the patient; the physician, if consulted, prescribes rhinitis tablets, a cathartic, and possibly an alkaline wash, and the trifling disease is speedily forgotten. That is a lucky outcome for the patient who does not realize that he has escaped abscesses in the middle ears, mastoiditis with possible complications in the brain or venous sinuses, and lung infection such as pneumonia or tuberculosis. In fact, many persons seldom or never connect serious diseases with a socalled cold, but this condition is primordial in illnesses that persist throughout months or years and end in a fatality; for example, brain abscess or pulmonary tuberculosis.

Every chronic disease was at some time acute. Chronicity represents merely the inability or failure of Nature to heal disease within a limited time of days or weeks. Anatomical construction may prevent Nature from utilizing her factors of safety. Then there is to be reckoned with, of course, the virulence and viability of the microorganisms which are the exciting cause of the malady.

If one studies carefully the anatomical configuration of the nasal sinuses it is surprising that, once infected, they should ever become normal again; and yet the tendency to healing is so potent that recovery is the rule and chronicity is the exception.

All of these head cavities have small openings or communications with the nasal fossæ, but they are disadvantageously placed. The frontal sinus, the antrum, and the anterior ethmoid cells of each side open near each other in the middle meatus beneath the middle turbinate. The posterior ethmoids and sphenoid open into the recessus sphenoethmoidalis far back and high up so that secretions from them must flow into the postnasal space. The antrum opening is small and high up in the outer wall of the nose and drainage must take place uphill, or when the head is flat upon a pillow if at all. Curiously enough the frontals, which of all sinuses are best located for gravity drainage, have a nasofrontal duct or groove which guides their secretions directly into the antrum opening, or passing that by, into the postnasal space. Moreover, these openings, once they become blocked by swelling or thickening of the mucous membrane, are likely to remain closed, and then the secretions within the cavities are bottled up and we have to deal with a closed empyema which is fairly inaccessible even to the special student or worker in these regions. No mechanic of any ability would build such an awkward, stupid, interrelated set of chambers such as these are. He would certainly provide against accidents and eventualities which might be limited at any rate even if unpreventable.

Acute sinusitis is quite easily diagnosed. There is always a severe cold in the head lasting a week or so, followed by a period during which profuse yellowish or greenish discharge is brought back out of the pharynx or blown forward into a handkerchief. Along with these evidences there is headache of a peculiar type, mental depression, loss of appetite, and stuffiness in the ears. Elevation of temperature is not the rule, although it may rise a half or one degree above normal.

If the frontal sinuses are involved, headache comes on at a rather definite hour each morning, and leaves at about the same time each afternoon. This is thought by many authorities to be pathognomonic of frontal sinus disease. There is tenderness at the inner canthus below the supraorbital margin, and percussion over the frontal bone may elicit pain. One must remember, however, that sometimes in antrum disease, pain is referred to the frontal region and is not at all located in the face—a fact well emphasized by Ross Hall Skillern of Philadelphia. In every case of suspected sinus disease the teeth should be carefully

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studied, as a carious tooth may lead to a mistaken diagnosis of sinus or ear disease and vice versa.

As mentioned, many cases of acute sinusitis subside spontaneously or after some simple treatment such as spraying or irrigating, but in this article I wish to stress the importance of recognizing the subacute, latent, or chronic infections of the paranasal cavities.

Chronic sinusitis is very frequently overlooked. Even the rhinologist who is thinking only of nasal insufficiency (obstruction) may fail to keep the sinuses in mind while making an examination. In many of these cases there is a deviated septum and hypertrophied turbinates. Correction of either or both fails to relieve the major symptoms, and the patient condemns nasal surgery as a vain and worthless procedure.

Practically all chronic sinus cases have a hypersecretion of a mucopurulent nature which falls into the postnasal space and follows the postpharyngeal wall to the upper part of the larynx, infecting it and passing on into the esophagus. There results a chronic laryngitis with frequent desire to clear the throat—the "A-hem" sound being characteristic of the effect made to shake secretion loose from the cords. The patient comes in complaining of his throat. There is dryness or the feeling of a lump or ball, or hoarseness which comes and goes according to the presence or absence of postnasal secretion. Nasal symptoms may not be described, but careful questioning will elicit them. Such patients are exceedingly susceptible to colds because they are "carriers" of bacteria and are so sensitized that a slight chilling, damp feet or a draft will produce immediate symptoms of rhinitis. Examination of the nose shows fluid pus or dried pus—crusts—and a scaly looking mucous membrane. The throat is dry and may show a true "pharyngitis sicca." In fact I have never seen the latter unless in connection with a sinusitis which is always present.

When nasal polypi are seen there is probably chronic disease of one or more sinuses. These growths are found chiefly in the middle meatus and originate in the ethmoid labyrinth or in the antrum. The old fashioned way of treatment was removal of the polypi with a cold wire loop without further inquiry into their deep origin. This gave some relief to nasal breathing, but the locus from which polyps grew was seldom touched. In recent years an attempt is made to exenterate the entire polyp bearing area. Of course, this is impossible in some cases, and small polypi will continue to grow out from inaccessible regions, but they can be kept down by cautery and removal so that the patient is very comfortable.

Chronic purulent infection in the nasal sinuses may cause chronic tonsillitis with fluid pus or cheesy deposits, tracheobronchitis and gastrointestinal disorders from swallowed pus. It is, therefore, a good rule to remove such tonsils before undertaking any sinus operation, as an acute tonsillitis not infrequently develops sharply upon any intranasal surgery—even cauterization of an inferior turbinate may light up a smouldering tonsil infection into an acute follicular tonsillitis.

One need not go into the matter of focal infection to emphasize the fact that chronic nasal sinusitis may be a potent and yet undiscovered source of bacterial invasion of the general system. To my way of thinking it is usually more important than tooth infection, and may antedate and supersede either the teeth or tonsils in the search for bacterial foci.

CONCLUSIONS

This paper is a failure if I have not made clear the following:

1. Many cases of sinusitis are masquerading under the word "catarrh."

2. Headache and postnasal discharge are pathognomonic of sinus disease.

3. Nasal obstruction is frequently but not always associated with sinusitis.

4. There are many missed cases which ought to be easily diagnosed.

5. Definite diagnosis is established from a good history, careful clinical examination, irrigation and aspiration, and, finally, x ray pictures.

6. Acute sinusitis recovers usually through relatively simple treatment; chronic sinusitis through operation and prolonged treatment.

114 East Fifty-fourth Street.

Blood Pressure and Its Pathological Changes

JULIUS FERBER, M.D.
New York

The advent of modern instruments of precision was followed by the auscultatory method for determining blood pressure suggested by Korotkow in 1905. Systolic as well as diastolic pressures can now be estimated clinically, with approximate accuracy.

Blood pressure is a term used to designate the measurable pressure exerted by the blood at any given point in the circulatory apparatus at any given moment. We may thus speak of intrauricular, intraventricular, arterial, capillary or venous pressure.

The arterial blood pressure is the result of a double effect. 1. The amount of blood thrown by the heart into the arterial system. 2. The amount of blood leaving the arterial system through the arterioles and capillaries (peripheral resistance). The amount of blood ejected by the heart will in its turn depend upon a, the force with which the heart contracts; b, the amount of blood contained in the heart; c, the number of heart beats a minute. A change in any of these factors would cause an alteration in the blood pressure provided there is no compensatory factor to nullify this effect.

The blood pressure throughout the vascular system varies not only with the phase of the heart contraction, whether systole or diastole, but also with the point at which it is taken depending on the size of the vessel and its elevation with regard to the heart (effect of gravity). The highest pressure is naturally in the aorta, and as we proceed with the brachial and radial arteries we find a gradual decline until we reach the capillaries where a sudden decline in pressure takes place. In the prone position the lateral pressure throughout the aorta is almost constant; in the standing position, however, the pressure at the lower end of the aorta is higher than that at the arch by the weight of the column of blood; approximately two mm. mercury per inch. The pressure in the veins depends largely upon the position of the body. In the upright position the pressure near the heart may be almost nil, varying of course with the phase of respiration, but as we go down the pressure increases about two mm. for each inch, due to the weight of the column of blood.

The resistance offered to the flow of blood at the periphery, namely the arterioles and capillaries, is a very important factor in determining the arterial tension. If the tone of these vessels is decreased and their size diminished the outflow of blood from the arteries into the veins is decreased, the pressure in the aorta is increased and the heart must contract with greater force in order to empty its content into the aorta. The pressure in the arterial system rises until it is high enough to overcome this resistance and allow for the outflow of as much blood as is thrown into the aorta with each heart beat.

The regulation of the tone of the arterioles and capillaries is brought about by the vasomotor nervous system. The vasomotor system consists of two parts, the vasoconstrictor and the vasodilator system. It has been claimed that chemical substances produced in the body may play a part in the regulation of the vascular tone. Gaskell has shown that acids in low concentration acting locally cause vasodilatation. This led to the suggestion that lactic and carbonic acids generated during muscular activity may have a local action on the bloodvessels causing dilatation of the arterioles and an increased blood flow. The central effect of these acids on the vasomotor centres, however, is to cause a contraction of the bloodvessels and a rise in blood pressure.

The constant secretion of epinephrin by the adrenals has been suggested as a factor in the maintenance of vascular tone and in the regulation of blood pressure. Cannon has shown that in cats after excitement there is an increased secretion of epinephrin. Under certain conditions such as in the case of excitement or sudden exertion the adrenals are stimulated. These organs respond with an increased secretion, epinephrin, which causes a rise in the arterial blood pressure. This will occur in all cases where the organism is called upon suddenly for an increased physical or mental effort. Under normal conditions, however, it is doubtful whether the adrenals play any important part as regulators of the vascular tonus. Hoskin and McClure have found that the amount of epinephrin that would be necessary in the circulation, in order to affect the blood pressure, would cause suppression of intestinal peristalsis. Moreover, the demonstration of minute quantities of adrenalin in the blood stream is extremely difficult, and the various tests employed are open to criticism. Posterior pituitary extract when injected intravenously causes a rise of blood pressure. The maximum rise in pressure may be as great as that following epinephrin, but the site of action is a different one. Epinephrin acts on the myoneural junction while pituitrin acts directly on the muscle of the arterial wall.

Subcutaneous or even intramuscular injections of pituitrin have as a rule little or no effect on blood pressure. The same is in the main true of epinephrin although deep intramuscular injection of the latter is more apt to cause an estimable rise of pressure.

Extracts of different organs such as pancreas, testis, ovary, thymus, brain, etc., produce on injection a fall of blood pressure. This fall is probably due to a substance called cholin. The fact that these substances have been extracted chemically from the different organs is of course no proof that they are normally secreted into the circulation or that they are under ordinary circumstances regulators of blood pressure.

BLOOD PRESSURE WAVES

If the blood pressure curve is recorded by suitable apparatus for any length of time three distinct orders of pressure oscillations can be observed. The first, the shortest wave, is cardiac and corresponds to the heart beat. It is caused by the difference in tension between the systolic and diastolic phases of the heart cycle. Next comes a longer wave known as the respiratory wave which is due to the combined effect of the changes in the pulmonary vessels, the changes in the vasomotor and cardiac inhibitory centres, and to some extent to the variations in thoracic and intra-abdominal pressures. Finally, there are still longer waves, the socalled oscillations of the third order. These are due mainly to rhythmic changes in the activity of the vasoconstrictor centre, and are apparently responsible for the blood pressure variations found in normal individuals.

PHYSIOLOGICAL BLOOD PRESSURE VARIATIONS

When blood pressure measurements are taken at the brachial artery with the individual in the sitting posture, the average systolic pressure for men is according to Woley 127 mm. mercury, for women 120 mm., and for children between six to twelve years of age 112 mm.

After the middle period of life the systolic pressure shows a tendency to rise. The increased pressure may in a certain sense be considered physiological as it is apparently compensatory in nature, but it should not exceed certain limits if not complicated by cardiovascular disease. A persistent pressure above 150 mm. Hg. during any period of life is pathological.

The blood pressure is lowest when a person is asleep, and gradually rises near the end of the sleep. Disturbing dreams may raise the pressure considerably. It is a known fact that unpleasant dreams may cause a patient to wake up suddenly at night with an attack of angina pectoris.

After a meal the blood pressure is raised. Mental excitement of whatever nature, even the novelty of having blood pressure measured for the first time, raises the blood pressure in normal individuals. All these variations affect mainly the systolic pressure, the diastolic pressure varies but little.

PATHOLOGICAL BLOOD PRESSURE CHANGES

The pathological changes in blood pressure are manifested either in a lasting increase known as hypertension or a lasting decrease known as hypotension.

Chronic hypertension may be associated with well established pathological conditions such as arteriosclerosis, nephritis, endocrine disturbances, or it may be the only discernible sign of abnormality. When appearing independent of other known diseased conditions it is designated as essential hypertension.

CLASSIFICATION OF HYPERTENSION CASES

The hypertension cases can be divided into three groups. 1. Those with a high systolic and a high diastolic pressure. 2. Those with a high systolic and a comparatively normal diastolic pressure. 3. Those with a high systolic and a low diastolic pressure. Cases belonging to the last group are conspicuously those of aortic regurgitation. Cases of the first group have but little elevation of pulse pressure, while cases in groups two and three give a high pulse pressure. The pulse pressure of cases in group three may exceed the diastolic pressure. If we try to arrange the different cases of hypertension into these several groups we find that those cases who show the same disease entity differ as to amplitude of the pulse pressure. In a series of fifty cases in our clinic there were eleven cases of nephritis associated with hypertension, and of these three showed a normal diastolic pressure while the others had a high diastolic pressure. Obviously, the exact mechanism in the production of the hypertension must vary in these cases. Our inability to evaluate the different factors responsible for the increase in blood pressure in each individual case, precludes a classification based upon the dynamics of the cardiovascular system.

Clinically the cases of hypertension may be classified for convenience into:

Functional.—This class includes cases of increased blood pressure due to excitement, exertion, pain reflexes, etc.

Organic.—Here belong, a, cases with heart disease, notably aortic insufficiency; b, cases with vascular disease, namely, arteriosclerosis and syphilitic involvement of the vascular system; c, cases with blood changes, namely, polycythemia; d, cases with kidney disease.

Essential hypertension.—Those cases with a permanently increased blood pressure due to unknown causes and associated with no demonstrable pathologic changes in the organism.

Toxic.—Here belong cases of asphyxia, cerebral anemia due to increased intracranial pressure, eclampsia, acute uremia, exophthalmic goitre and other endocrine disturbances, nicotine poisoning, etc.

THE EFFECT OF HIGH BLOOD PRESSURE UPON THE ORGANS OF THE BODY

A permanent increase of pressure necessarily implies a continued increase of ventricular force ejecting the blood under higher pressure than normal. The volume outflow, however, is not always increased, and in fact may be diminished. If the nutrition of the heart is good, this increased effort leads eventually to hypertrophy mainly of the left ventricle. The enlargement of the heart may become very marked, and depends on the ability of the heart muscle to respond to the demand for increased work and the amount of work actually done.

Associated with continued high blood pressure there are in the majority of cases changes in the vessel wall. The aorta and large vessels are dilated and their walls are thick, fibrous, and show a loss of elasticity. There are patches of arteriosclerosis. The smaller arteries and arterioles show different degrees of fibrous thickening and arteriosclerotic changes depending upon the type of the case. The glomeruli and vessels of the kidneys are almost always affected.

There is a difference of opinion as to the cause of these heart and vessel changes. Some authorities consider these the result of the high blood pressure, while others attribute them to the direct effect of the toxins which cause the arterial spasm and hypertension. In some cases arteriosclerotic changes undoubtedly result from toxins of acute infections or syphilis, and marked vascular changes may be discerned before any evident rise in blood pressure. Hypertension is not always associated with arteriosclerosis. According to Norris "about one third of all cases of well marked peripheral arteriosclerosis have normal blood pressures. In the remaining two thirds the pressure is variably increased, depending mainly upon the degree of renal involvements." In a series of twenty-nine cases of arteriosclerosis in our clinic twenty-four cases show a definite increase in pressure while five show no such increase. The condition of the radial artery as determined by palpation does not give a clue to the condition of the other vessels. Severe involvement of the renal and splanchnic arteries may be present with only slight thickening of the radial artery.

The great majority of hypertension cases show pathological changes in the kidney or its bloodvessels. Cases where during life no kidney dysfunction was demonstrable have been found on autopsy to show definite kidney lesions. Some cases of hypertension with no demonstrable kidney lesion on autopsy, have been reported, but these are rare.

ETIOLOGY OF HYPERTENSION

In 1836 Richard Bright first described the disease which now bears his name, and suggested as a cause of the cardiac hypertrophy so often found in these cases, even in the absence of valvular defect, 1, "That the altered quality of the blood affords irregular and unwonted stimulus to the organ immediately; or 2, that it so affected the minute and capillary circulation as to render greater action necessary to force the blood through the distant subdivisions of the vascular system." These two suggestions form the basis of the voluminous literature which has accumulated upon clinical and experimental data to account for nephritic as well as other forms of hypertension. At present the direct cause of hypertension is still unknown. We must also plead ignorance to the fact whether hypertension is always the expression of the same causative factor or whether different causes can bring about the same permanent rise in blood pressure. A uniform conception of the cause of this abnormality if plausible would bring us a step further in the management of the disease.

THE MECHANICAL THEORIES

Traube attributed nephritic hypertension to the resistance of the blood in the occluded kidney vessels.

Katzenstein has reported that in a dog partial occlusion of the renal arteries leads to an increased pressure. These results could not be corroborated by other workers, and it was pointed out from the clinical side that amyloid disease of the kidney where the glomeruli are extensively diseased, in its pure form is not associated with a high pressure. So that this theory of nephritic hypertension being due to a resistance in the kidney,is generally discarded.

TABLE I

HIGH SYSTOLIC COMBINED WITH LOW DIASTOLIC PRESSURE. READINGS TAKEN ON DIFFERENT DATES. NOTE THE MARKED FLUCTUATIONS IN BLOOD PRESSURE.

Case No.	Systolic/Diastolic								
3	180/100	150/75	170/85	180/90	200/90				
5	200/100	160/80	185/90	175/85					
7	185/75	135/75	160/80						
12	165/80	160/70	135/90	150/90	130/85	130/85	130/85	140/78	
23	210/90	150/80	155/70	180/70	150/75	225/90	150/90	140/65	
24	165/70	190/90	170/85						
28	180/90	170/90	140/90	140/100					
34	180/80	174/80	170/80	190/90	140/80	145/85	135/65	180/85	
35	170/60	170/70	150/50	160/80	165/70	180/60	**155/60**		
36	200/80	205/85	190/85	160/60	150/80	220/90	225/90		
37	220/90	185/70	170/50	180/75	165/80				
39	180/85	140/70	130/80	145/90	150/100	165/85	160/80	140/74	185/100
41	190/80	180/80	180/100	195/90	175/90				
21	220/90	225/80	210/75	190/90	200/80	160/80	185/85	150/70	
48	190/80	180/90	180/100	195/90	190/90	170/90			
51	190/90	185/85	195/90	150/80	175/70				

CHEMICAL THEORIES

It is the trend of modern medical opinion to consider hypertension as a distinct entity which may occur alone or be associated with nephritis, but the cause of the hypertension is probably the same in the two conditions. According to Warfield "hypertension is a physiological response on the part of the organism in order to maintain the circulation in equilibrium in the face of conditions which tend to produce vasoconstriction in large areas and, therefore, tend to deprive these areas of blood." He also states "that there must be some substance in the blood stream which causes the constriction seems certain." These statements represent our modern belief as to the cause of hypertension and follow the suggestion of Bright, that an altered composition of the blood might account for the cardiovascular changes. What substance in the blood causes the vasoconstriction is of course unknown. It is certainly not the retention of the ordinary metabolites. Repeated blood chemistry done on our hypertension cases in the clinic fail to show any definite relation between the amount of nonnitrogenous retention products in the blood and the degree of hypertension.

Many attempts have been made to identify this pressor substance. A substance renin has been extracted from the rabbit's kidney by Tigerstedt and Bergman which when injected into animals increased arterial tension. It has been claimed that autolysis of the pathological kidney causes this substance to enter the circulation and exert its pressor effect. Gubar found that the blood serum of nephritics has vasoconstricting properties. Voegtlin and Macht have isolated a crystalline substance from the blood and adrenal cortex which is related to cholesterin and acts as a vasoconstrictor. Ascoli found that nephritic serum has hypertensive properties while others have found vasoconstrictor substances in increased quantities in the diseased kidney. While these assertions were widely quoted Pearce showed definitely in 1908 that nephrotoxins are not specific. It has also been pointed out by Janeway that "hypertension is most extreme in those intensely chronic types of nephritis in which breaking down of kidney substance must be at a minimum if there is any at all."

TABLE II

SYSTOLIC AND DIASTOLIC PRESSURES IN NEPHRITIS

Case No.	Pressure Readings	Urine			Blood Chemistry (Mlg. per 100 c.c blood)						Grounds	Associated signs
		Albumin	Casts	Sugar	Urea Conc.	N.P.N.	Urea	Creat	Uric Acid	Sugar	Eye	
2	170/100, 175/100	plus	few hyaline	glycosuria at times	1%	65	40	2.1	3.1	90		
20	260/120, 190/90, 200/110	4 plus	hyaline granular		0.8%	90	65	5.3	4.1	112	Retinal sclerosis,	Water logged,
22	220/110, 200/110	2 plus	granular		0.9%	70	35	2.2	3	100	atrophy	edema
25	180/90, 170/90, 190/85, 160/90	trace	hyaline	glycosuria rare	0.7%	55	28	2.2	2.5	130		
27	135/90, 160/85	4 plus	hyaline granular occasional		1%	42	16	1.2	1.6	240	Retinal sclerosis, haemorrhages	Calcified iliac arteries
32	230/130, 210/110, 190/110	faint trace	hyaline		0.9%	50	24	1.1	3.4	80	Retinal sclerosis, haemorrhages	
34	180/80, 175/80, 170/80, 190/90	trace	hyaline		1%	60	24	2.3	1.5	170	Retinal sclerosis	
35	170/60, 170/70, 150/50, 160/80	trace	hyaline		....	70	55	2	2.1	120	Fundus normal	
40	180/120, 175/110, 170/110	3 plus	few hyaline		0.5%	92	64	2.2	3	72	Slight retinal sclerosis	
41	190/85, 160/70, 140/75, 190/90	faint trace	few hyaline		7%	43	14	1.1	2	130	Fundus normal	
42	200/90, 160/90, 180/90, 210/100	faint trace	hyaline		1%	70	35	2.1	1.8	105	Retinal sclerosis	

TABLE III

MARKEDLY FLUCTUATING TYPES OF HYPERTENSION READINGS AT FIVE MINUTE INTERVALS

Case No.	Systolic/Diastolic						
23	180/80	200/80	200/80	195/80	200/80	160/80	
36	180/90	150/75	130/70	170/80	190/80	170/80	140/90
21	155/75	185/80	190/80	175/80			
14	190/90	170/100	185/120	205/100			
41	180/90	150/75	130/70	170/80	190/80	170/80	140/90

EPINEPHRIN

Neusser first suggested the hypothesis that nephritic hypertension is due to an increase in the activity of the suprarenals. In support of this theory it was pointed to the hyperglycemia associated with hypertension. In this series of about fifty cases there are twenty with little or no hyperglycemia. Those showing a definite rise in blood sugar we feel justified in assuming as a result of careful observation, that an actual carbohydrate storage deficiency exists due most likely to sclerotic changes in the islands of Langerhans. Dietetic and insulin treatment brings the blood sugar down to normal but does not affect the blood pressure. It may be of some interest to note that some hypertension cases respond to hypodermic injection of adrenalin with a lowering of systolic pressure. We have injected 5 min. of adrenalin subcutaneously, and found a definite drop in the pressure in some cases in spite of marked systemic action of the adrenalin as evidenced by tremor, pallor, forcible action of the heart and increased pulse rate.

Cholesterinemia by some and an excess of dimethylguanidin sulphate in the blood by others have been considered the cause of hypertension. At the present these are theories which one may accept or reject.

Assuming the cause of hypertension to be due to some pressor substance retained in the blood causing vasoconstriction, it is rather hard to account for the marked fluctuations in pressure found in many of these cases. It is difficult to conceive of this substance being disposed of by the organism only to appear again at such irregular intervals. From the cardiodynamics point of view an increased peripheral resistance causes an increase of diastolic as well as of systolic pressures. Wiggers states that "if peripheral resistance is increased both systolic and diastolic pressures progressively increase, the diastolic pressure rising more than the systolic. Almost fifty per cent. of this series of cases show little increase in diastolic pressure, regardless of the height of the systolic pressure. Only our frank nephritis cases show a decided tendency to high diastolic pressures and this tendency seems to bear a definite relation to the amount of the nitrogen retention products in the blood. These outstanding clinical facts would argue, it seems to me, against vasoconstriction and increased peripheral resistance being the only feature in the pathogenesis of hypertension.

HEREDITY

Clinically one gets the impression that there is a definite hereditary tendency to hypertension. I have been able to obtain a definite history of hypertension in the immediate family in fifteen out of seventy-five consecutive cases. I have also found that the blood pressure in the young offspring of hypertension cases is not infrequently definitely above what would be considered normal for the age. In one family where both parents were affected I have found the oldest son to have a systolic pressure of 220 and a diastolic pressure of 120. One son had a pressure of 190 while one girl twenty-one years of age had a pressure of 150 mm. mercury. Three other children in the family I was not able to examine.

A hypertension case is as a rule an individual peculiar to his class. A patient who on examination discloses no abnormality outside the increased blood pressure, when questioned will state that they experience a peculiar sensation in the epigastrium on the slightest emotional disturbance. The meeting of an undesirable person, even the anticipation of meeting one, is associated with a sinking sensation in the epigastrium, forcible beating of the heart, pulsating bloodvessels, flushing of the face and mental confusion. The mere thought of some new experience brings about an undue cardiac response. In other words, these people instead of responding to mental stimuli with accelerated cerebration, increased attention and augmented mental capacity with but slight increase in the heart action, respond with a cardiac explosion, an abnormal rise in blood pressure and mental confusion. The abnormal responses repeated many times a day may account for the marked variation in blood pressure these people show not only from day to day, but also within short periods of the same day. Eskil Kylin considers essential hypertension as a functional disturbance associated with various nervous manifestations. Kylin and Fahrenkemp have pointed out a group of blood pressure cases which are distinguished by its extreme variability. Leo Hahn has classified a group of cases under the name of Chronic Intermittent Hypertension, the most characterisic sign being not so much the height as the variability of the blood pressure curve. In our series of cases there are twenty with marked fluctuation in systolic pressure.

SIGNS AND SYMPTOMS

Patients with hypertension may not register any complaint for a number of years, but sooner or later a certain train of symptoms appear related to the cardiovascular, renal, gastrointestinal, nervous, ocular, and aural systems. As to which type of symptoms will predominate in an individual case, depends primarily on the extent of vascular involvement of a particular organ or group of organs.

Nervous Symptoms.—Headache, often occipital pressure, a sensation of fullness in the head, nervousness, irritability, inability to concentrate, insomnia, migraine, tingling, numbness, transitory aphasia, sweating of the hands and feet and flushing of the face.

Cardiovascular symptoms.—Even early in the disease when the heart hypertrophies to meet the demand for increased work, and before any dilatation sets in, the patient is apt to become conscious of his limitations for sudden physical effort. The patient apparently in the prime of life and in good physical condition, will begin to complain of becoming winded on exertion. Climbing of stairs and running would be accompanied by slight precordial pain. Later on as dilatation occurs, the patient begins to complain of tachycardia, dyspnea, and palpitation even on slight exertion. Severe angina, muscular cramps, sudden attacks of night asthma, and pulmonary edema are late and dangerous symptoms. Recurrent epistaxis which may become severe is sometimes found in these cases.

Gastrointestinal symptoms.—Hyperacidity, distention, belching, epigastric pain which may be very severe and lasting, flatulence and constipation.

Renal symptoms.—Polyuria with nocturnal micturition is rather an early and universal symptom. In the urine which is of low specific gravity one usually finds a trace of albumin and on careful search almost always some casts. The kidney functional tests are negative at the beginning and only with a progressive disease of the kidneys can diminished function by these tests be shown. Increased retention in the blood urea is not found in uncomplicated cases. Increase of sodium chloride in the blood is not characteristic of hypertension. Hyperglycemia is found in some cases, but as the blood sugar can be lowered by dieting without at the same time reducing the blood pressure, the relationship between the two is not clear.

The ocular symptoms may be transitory, due to no definite organic changes, or permanent, and the result of sclerosis of the retinal vessels, hemorrhages, and atrophy. Tinnitus aurium and vertigo are frequent symptoms of hypertension.

On inspection two types of patients are to be distinguished according to Volhard, the red hypertension type where the patient has a plethoric robust appearance and the pale hypertension type. The red type he attributes to the fact that the skin capillaries do not participate in the spasm of the internal arterioles while in the pale type the whole system of capillaries both superficial and deep are contracted.

Hypertrophy of the heart comes early and may reach extreme dimensions. Such hearts are among the largest met with in the pathology of this organ. Later on we get cardiac dilatation which may lead to death.

The treatment of hypertension is as uncertain as its etiology. We have tried in our clinic everything from the old fashioned nitrites and iodides down to protein therapy. The marked spontaneous variations in pressure usually mislead one as to the efficacy of a certain remedy. Early cases present the best hope for controlling the condition. Blood pressures of 150 to 160 we were able to bring down for periods of months by undernutrition, rest and sedatives, but as soon as the patients resume their previous routine of life the pressure tends to rise again. Blood pressures of 200 or more can only be brought down by absolute rest in bed. Of all the sedatives luminal is perhaps the best to allay the irritability and bring down the pressure, but it fails as often as it succeeds.

Arterial hypotension.—Hypotension, by which we mean a systolic pressure below 115 mm., is usually associated with a diastolic pressure below 80. This condition is found after hemorrhage, in acute infectious diseases, convalescence from prolonged disease, in malnutrition cases, and cachexias such as accompany tuberculosis, malignancy and Addison's disease. There is a class of hypotension cases where the anomaly is a constitutional expression of inferiority. This class is designated as constitutional low arterial pressure or essential hypotension. These people are apparently not sick but they are not robust, they tire easily and are incapable of prolonged physical or mental effort. They complain of cold and moist extremities, suffer from dyspepsia, headache, lassitude, mental depression and constipation. They are often high strung individuals, easily upset and moody. Some are very sensitive to nicotine and caffeine as well as to atmospheric and barometric fluctuations.

The cause of hypotension in these cases is ascribed to lack of tonus of the arterial wall causing vascular stasis mainly in the splanchnic area. As a result too little blood reaches the heart, the heart output is small and the blood tension low. The coordinating mechanism of the vasomotor system, so important in man who has assumed the upright position, is apparently not functioning in these people. Cholin and histamine—the latter may be formed in the intestinal tract by the action of the bacillus aminophylus intestinalis upon amino acids—have been claimed as the cause of chronic hypotension.

On physical examination one very often finds in these cases a splanchnoptosis with ptosed stomach, hepatic and splenic flexures. The duodenum may reach down to the lower border of the fourth lumbar vertebra. The muscles are soft and flabby and incapable of sustained contraction. The kidneys are often ptosed, and by kinking of the ureters or the renal vessels may give rise to a complex picture of urinary disturbances.

244 East Fifteenth Street.

On the Etiology of Cancer

LEVERETT D. BRISTOL, M.D., Dr.P.H.
New York

It is becoming increasingly evident that neither the microscope nor the ultramicroscope will ever reveal a specific microorganism as the cause of cancer. It would seem, therefore, that we must look more searchingly into the fields of physiology, biophysics and biochemistry for the elucidation of the etiology of this disease, which at present is third in rank as a cause of death in many of our communities, outnumbered only by heart disease and pneumonia.

In 1919, the writer (1) called attention to the possible relation of localized accumulations of uncontrolled lymphocytic enzymes to cancer, based on previous studies and publications (2) on the subject. Since that time, more evidence has been forthcoming to strengthen this hypothesis.

Possibly the one outstanding fact demonstrated as a result of careful clinical and pathological research, with regard to the etiology of malignant disease, is its rather definite relation to chronic cell and tissue injury and the resulting reaction of chronic inflammation.

One of the cardinal microscopic signs of chronic inflammation is the socalled small round cell infiltration or localized accumulation of lymphocytes. In the past, a large percentage of investigators have recognized the relation of chronic tissue injury and inflammation to cancerous development, but sufficient attention has not been given to the possible importance of the lymphocyte, with its comparatively large enzyme, bearing nucleus, as an intermediary between

chronic inflammatory reaction, normal repair and malignant development.

On the assumption that one of the chief functions of the lymphocyte is to carry growth promoting and repair stimulating enzymes to body cells and tissues in general, it seems reasonable to suggest that due to chronic injury and inflammation from all sources (physical, chemical or parasitic) the chronic accumulation and localization of these powerful little storehouses (lymphocytes) of nuclear enzymes and growth promoting energy, at any one point in the body, may give rise even to a permanent abnormal growth and reproduction of neighboring cells and tissues; resulting in malignancy in those individuals in whom the normal defensive mechanism to cell or tissue overgrowth is temporarily or permanently absent or destroyed.

The investigations of Carrel on socalled leucocytic trephones (3) demonstrates that the lymphocytes truly may be considered as storehouses of growth enzymes and energy. After cultivating fibroblasts in serum for eight days, during which time they were subject to degenerative changes, Carrel was able to show a spontaneous rejuvenation of such fibroblasts by the stimulating influence of nearby lymphocytes. He noted, also, that the rate of proliferation of fibroblasts was increased severalfold when they grew near colonies of lymphocytes. From this it is concluded that lymphocytes are endowed with a function of primary importance in the nutrition and growth of tissues.

If lymphocytes, as noted above, are so definitely related to the physiological nutrition and growth of body tissues, it seems logical to point out that these same stimulating and energy bearing cells of the circulation, under variable conditions of localization, concentration and lack of control may give rise at times to abnormal nutrition, atypical and aberrant growth, and lawless reproduction of neighboring cells and tissues.

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Mental and Physical Rest in Pulmonary Tuberculosis*

S. ADOLPHUS KNOPF, M.D.
New York

(*Concluded from page* 669)

We may now proceed to discuss briefly the means to obtain additional local rest for the invaded lung. Our thoughts of course go first to artificial pneumothorax. On its indications and contraindications volumes have already been written and it is not necessary for me to repeat even the essentials of this valuable means to obtain local rest by partial or complete collapse. The principal limitation to this procedure rests in the difficulty of applying it because of the frequency of pleuritic adhesions. Jacobaeus's operation (8), which consists in dividing pleuritic adhesions with the aid of the thoracoscope and the lung cautery protected by a cannula, is to the best of my knowledge rarely resorted to because of the danger of coming across vascular adhesions and causing subsequent serious hemorrhages. In view of the frequent unpleasant and even dangerous sequelæ, artificial pneumothorax is a remedy which should be applied only when conditions warrant its long continued use under most careful medical supervision and, in the earlier cases, only where other means for rest have failed and the disease has a tendency toward progression.

I do not stand alone in holding this view. It is coming to be more and more accepted by careful phthisiotherapeutists. Over three years ago Pottenger (9) made the following statement: "Pneumothorax should not be considered a cure for tuberculosis. I do not find it indicated except in a very small group of cases. Any patient who can get a result without pneumothorax is better off than one who has had his lungs compressed." Swezey of Denver (10) in reporting recently more than two hundred cases, says that advanced lesions in the good lung contraindicate the treatment. "As to all other cases, while the balance of evidence seems to be slightly in favor of the treatment, yet, considering especially the frequency of complications resulting from this treatment in such cases, it is probably best not to be too optimistic about it." Lawrason Brown (11), who is an enthusiastic advocate of prolonged bed rest, tries posture treatment for two or three months, as recommended by Webb (12), and only if this fails does he recommend a trial of artificial pneumothorax.

There are, of course, safe methods for immobilization of the lung by external means. We have Edison's adhesive straps (Fig. 2), used with the aid of Lilienthal's elastikon (Fig. 3). This method is particularly indicated when the chest must be entirely encircled. The elastic band allows the less affected side to expand and breathe comfortably, while the opposite side with the aid of ordinary adhesive straps over the nonirritating elastikon is made virtually immobile. Moreover, there are Forster's plaster of Paris jacket (Fig. 4), which permits the compression of the apex of the upper lobe in part or entirely with the aid of inflatable rubber bulbs; Sewall's belt (Fig. 5); David A. Stewart's Manitoba appliance for partial immobilization (Fig. 6); the St. Louis pneumatic pulmostat (Fig. 7); S. H. Stewart's English lung splint (Fig. 8); and my own saddle bag (Fig. 9). The illustrations of the five latter appliances explain themselves.

Besides these appliances for restricting respiration we must not fail to mention Webb's posture treat-

*Read by invitation before the Philadelphia County Medical Society, May 12, 1926, and in French before the IXe *Congrès de l'Association des Médecins de Langue Française de l'Amérique du Nord,* Montreal, September 22, 1926.

ment as an important and practical means to procure rest for the afflicted lung during sleep, or even during the day when the patient is resting in bed or on the reclining chair. Besides urging the patient to sleep on the affected side Webb places under the dependent side a small firm pillow to restrain motion of lung to a greater degree (24). Sometimes a belt or bandage pinned or buckled so that it can be easily removed if the patients, especially those in the advanced stages of the disease, experience a feeling of suffocation, may be put around the other portion of the thorax to help in teaching how to limit the respiratory movement. Lawrason Brown (25), who is an enthusiastic advocate of prolonged bed rest, tries posture treatment for two or three months as recommended by Webb, and only if this fails, does he recommend the trial of artificial pneumothorax.

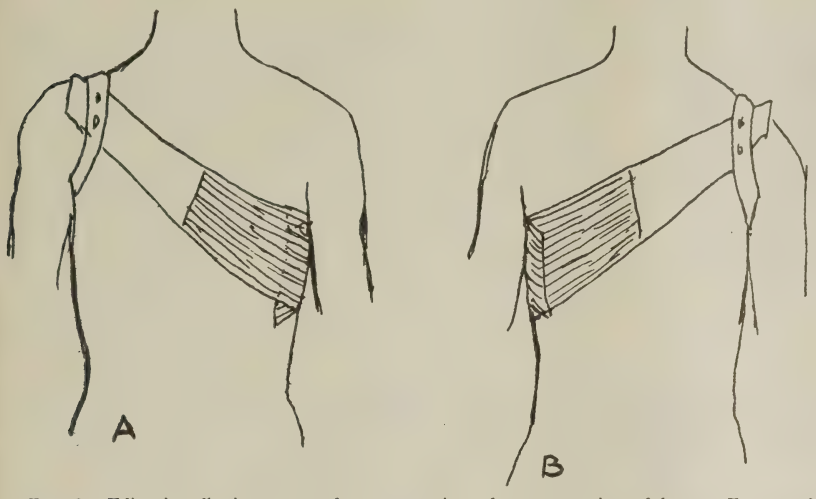


FIG. 2.—Edison's adhesive straps, for compression of upper portion of lungs. Front and back views.

In addition to any of the appliances here illustrated and described or without them, and in fact long before their use might become indicated, there is a method of reducing the activity of the invaded lung and limiting the respiratory movements to the lower lobes.

As is well known, in the vast majority of cases the tuberculous lesion begins in the apices or the upper lobes. It is obvious that in such cases diaphragmatic respiration is particularly indicated.

The story of how I came to work out this method is simple. Realizing the many failures in the administration of artificial pneumothorax and that the external restricting measures are not always easy to apply and can never be complete, I sought for additional means to help in giving the lung the much needed local rest. Observing animal life and from the study of comparative physiology, I noticed that the slow breathing animal seems to be the longest lived and least susceptible to tuberculosis. The rabbit which is one of the most susceptible animals to tuberculosis, particularly to the bovine type, breathes fifty-five times per minute; the adult guineapig eighty times; the young guineapig 140 times a minute. It is well known that the latter is very susceptible to both types of tuberculosis. The horse which of all the domestic animals is the least susceptible to tuberculosis, breathes only ten times a minute when at rest, but the cow and the calf, breathing eighteen to twenty-five times, contract tuberculosis most readily. The animal which perhaps lives longest is the turtle, and its respirations are so few per minute that they are hardly perceptible. Its resistance to human tuberculosis inspired Friedmann to make his vaccine which alas, up to now, has not proven what the inventor claimed for it.

Now, if the slowly breathing animal is least susceptible to the invasion of tuberculosis, and the lung invaded by tuberculosis is benefited by restriction of its respiratory movement through outside pressure, or by the complete arrest of function by means of an air splint (artificial pneumothorax) or bone compression (thoracoplasty), why should not restricted respiratory movements and reduction in their number by voluntary effort be equally valuable as an adjuvant in the cure of pulmonary tuberculosis? I experimented on myself and have been able to reduce my respirations, without discomfort, to eight, six, and sometimes five per minute.

However, prior to trying the method on my patients, I consulted Dr. Graham Lusk, professor of physiology at Cornell University, about the possibility of doing harm by an accumulation of carbon dioxide.

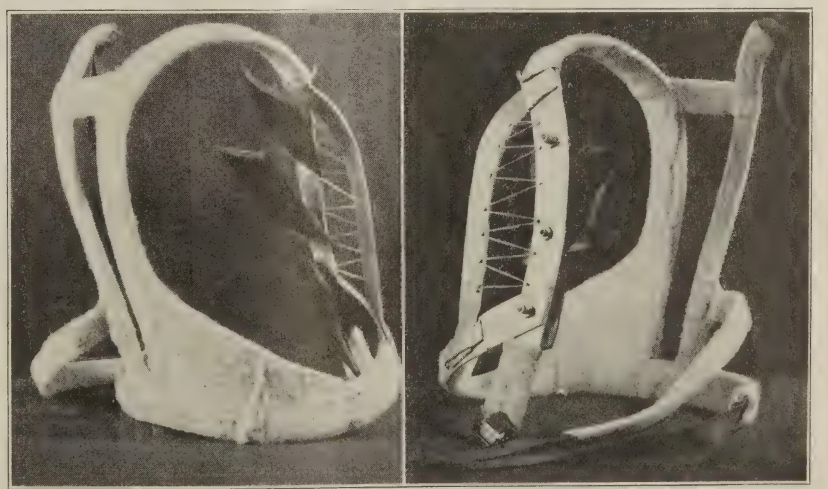


FIG. 4.—Forster's plaster of Paris jacket, permitting the compression of the apex of the upper lobes in part or entirely, with the aid of inflatable rubber bulbs.

I demonstrated for him this method of breathing, and to his surprise I was able to reduce my respirations to four per minute. He told me that in his opinion no possible harm could be done to any one by using superficial respiration or restricting the number of respirations per minute. Wishing to have

something authentic on the subject I asked him to be good enough to write me his opinion with permission to use it in an article which I was intending to prepare on the physiological restriction of respiratory movements, and he most kindly wrote me as follows:

"Under ordinary conditions the production of carbon dioxide in the tissues controls the volume of the respiration. If the number of respirations per minute

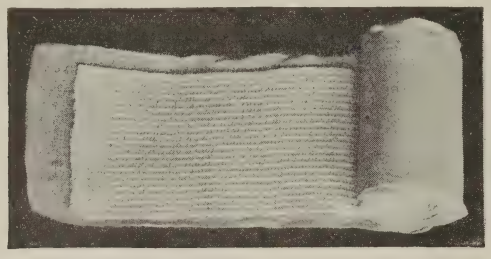


Fig. 3.—Lilienthal's Elastikon (adhesive plaster) which may be used for the Edison method of strapping. On account of its elasticity it is especially useful when the chest must be encircled entirely.

be decreased, the volume of air expired and inspired per breath is automatically increased. The total gaseous exchange, however, remains approximately the same. Under ordinary conditions of rest the quantity of oxygen absorbed is almost the same whether there be seven or fifteen respirations per minute."

Through the courtesy of Professor Lusk and with the valuable cooperation of Dr. D. P. Barr of the Russell Sage Institute of Pathology, I was permitted to make some spirometric tests during the respirations restricted in number and limited to the diaphragmatic mode of breathing. Dr. Barr, now professor of medicine at St. Louis, kindly lent himself to the experiment. After I had demonstrated to him how he could diminish the number of respirations to five per minute and limit them to the basal portion of the lungs, he was surprised to find with what comfort he could do it, and thought he could do it indefinitely.

On a recent visit to the Mayo Clinic, I had the honor of demonstrating the method of controlled diaphragmatic respiration before the large number of visiting physicians studying internal medicine under the leadership of Dr. Lemon. Thanks to the courtesy of the Mayo brothers and Dr. Walter M. Boothby, their chief of the metabolic service, it was also my privilege to have some metabolic tests made in connection with the method of rest breathing. These tests proved that there was a difference of less than one half per cent. between the intake of oxygen and giving out of carbon dioxide under the two conditions; that is to say, during normal and during controlled diaphragmatic breathing. The change in the basal metabolic rate was from -3 to -1, which, as Dr. Boothby says, is without significance. The respiration was reduced by half during the controlled diaphragmatic breathing and the pulse rate three per minute. Aside from these laboratory demonstrations we know from clinical observation that the patient can live and breathe comfortably even if the left or the right side of the lung is partially or totally compressed by artificial pneumothorax or external thoracoplasty.

The patient should be made to understand the necessity of shallow breathing when he is not using the diaphragmatic method, and of course should, as already stated, never cough unless he feels the necessity of expectorating. It goes without saying that just as the general rest cure must always be carried out where the air is fresh and pure, so should it be with the rest breathing. In cold weather the feet should be warmed with the aid of hot water bottles or bags, and in summer a comfortably cool place should be chosen.

The tuberculous invalid should be convinced of the fact that if he has the good will, patience, and perseverance to carry out the rest breathing method conscientiously and in a cheerful and hopeful frame of mind, he will surely derive great benefit from it, and it will lead him to a more rapid recovery. Whenever sad or depressing thoughts come over him, he will easily dispel them by concentrating his mind on diaphragmatic and restricted breathing, something which he himself can do toward bringing about his own recovery. Now as to the *modus operandi.*

The best position for the patient to assume when being taught the practice of controlled diaphragmatic breathing is to lie in or on the bed in a semireclining position, with feet extended and slightly separated, which position demands the least cardiac efforts against gravity. This position can be best obtained in bed by the use of two or three pillows, and later on may be imitated as closely as possible on the typical sanatorium reclining chair, such as is illustrated on page 667 by regulating the back of the chair so as to be at an angle of 30°. In this position relaxation is most easily obtained and the heart is called upon to do the least work. It goes without saying that if the patient is dressed there must not be any garment that would restrict the free exercises of the diaphragm and abdominal muscles.

Before beginning the rest breathing it is presumed that as the result of the explanation and instructions given him beforehand, the patient will be relaxed in mind and body. This relaxation of the body is essential and whatever muscular effort is exerted during

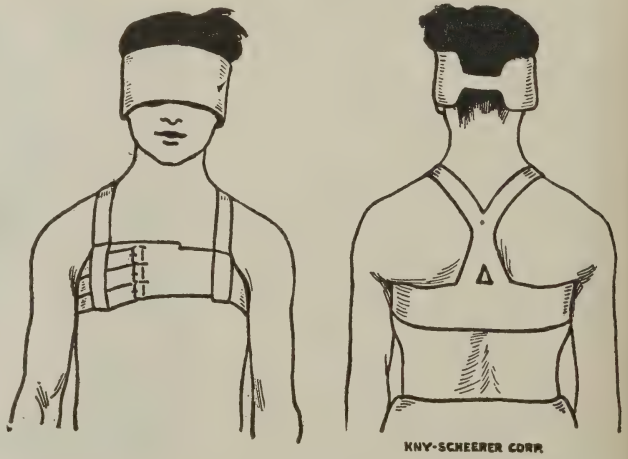


Fig. 5.—Sewall's belt for compression of the chest; anterior and posterior views.

the breathing exercises should be as slight as possible. He is then told to imagine that the respiratory movement begins in the toes of the right foot, the inhalation gradually traveling upward as far as the diaphragm on the right side, then crossing over to the left, and gradually descending during exhalation downward to the left foot. While, of course, this

breathing upward from the toes to the abdomen is merely imaginary, it results in a diaphragmatic breathing and whatever quantity of air is inhaled passes mainly through the lower portions of the lungs while the upper portions, where tuberculous lesions are usually located, are put, if not entirely, at least at comparative rest.

Before leaving the patient, the physician should count the number of respirations per minute with watch in hand, and thus see what can be accomplished. This is particularly indicated with highly nervous and dyspneic patients, who must be shown what patience and perseverance can achieve in the reduction of respiratory movements. This class of patients often take many short, jerky breaths per minute and seem to have no control over their diaphragm. They must be assured that they will learn with practice and may begin by stopping a few seconds after exhaling, which is the easiest part of the procedure They will learn to stop also after inhalation and learn the use of the diaphragm. It is surprising how easily the average patient learns to reduce the number of respirations per minute by not breathing at all for a few seconds after exhalation.

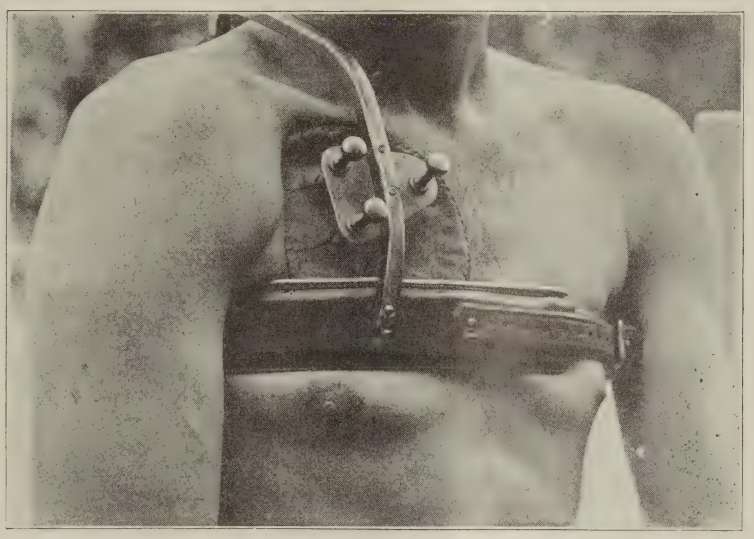


Fig. 6.—David A. Stewart's Manitoba Apparatus for compression of the chest, which must be fitted to effect compression where most desired.

Although we believe that by our spirometric and metabolic tests and clinical observations we have demonstrated that in controlled diaphragmatic respiration there results no air hunger and no increase of carbon dioxide, some patients might feel the desire for deep inhalation or for more rapid breathing after the prescribed exercise. The possibility of harm being done by a true or imaginary effort to compensate the air supply can be overcome by teaching the patient to return only gradually to his normal type of breathing. Dr. Martin F. Sloan, the director of the Maple Heights Sanatorium, at Sparks, Md., who has tried the controlled diaphragmatic respiration extensively, uses this precaution of gradual return to the previous mode of respiration. He is convinced that this prevents an acceleration of the respiratory movements likely to counterbalance the effect of the limited movements.

For how long a time and how often should the patient resort to this slow and controlled diaphragmatic breathing?

If the patient is a bed case, he may be told that since it cannot do him any harm and that with every additional minute of rest he gives his lungs, his condition is bound to improve, he should do it whenever he feels like it, and as long a time as he enjoys it. At the beginning the patient may not be able to take this rest breathing for more than a few minutes at a time. Some are able to do it right from the start for five minutes at a time, others even for ten. Fifteen minutes is in most instances the maximum duration for continued rest breathing. The patient may resume another period of rest breathing as soon as he feels like it, but he should bear in mind that whenever he is not practising the controlled diaphragmatic respiration, his breathing should be quiet and rather shallow. He will not suffer from air hunger by so doing.

The fakirs of India who have been mystifying European audiences by allowing themselves to be buried for considerable lengths of time, are able to do this trick by economizing the little oxygen at their disposal by remarkably shallow breathing. They are thus reducing the interchange of oxygen and carbon dioxide to the lowest possible minimum. Our own Houdini, who passed away recently, practised the same method and far outdid the Indian fakirs by remaining buried twice as long as the one who challenged him to imitate the burial trick.

Ambulant cases, who are up and about but still taking the cure, should do the rest breathing whenever they can, particularly in the morning after awakening, during the day when having their rest hours, and in the evening before going to sleep. Ambulatory and afebrile cases, who, for one reason or another are obliged to work, might take the rest breathing when in a sitting position and be able to do it without interfering with their work. Of course, above all it should be done in the morning before rising, and in the evening after having retired. This breathing may also be practised at night if a patient is wakeful. In many cases, if done quietly and regularly, it will be found conducive to sleep.

Experience has shown that diaphragmatic breathing, after being practised for a length of time, will become automatic and thus be of continued benefit to the patient until the complete arrest of the disease is accomplished, and even protect him from the danger of a relapse.

To make rest breathing more interesting to the indifferent patient, he may be told to write down the number of diaphragmatic respirations he has taken per minute and the number of minutes he has persisted in the procedure, and then calculate at the end of the day how many respirations he has saved his lungs by having breathed only four, five, six, or ten times a minute instead of twenty or more times, whatever the number of respiration prior to begin-

ning the treatment. Of course he cannot do this without having a time piece. If there is no clock where he can easily see the dial, a small clock or watch should be placed on a stand near the bed or suspended nearby so that the patient will not have to tire his arm or hand taking out a watch every few minutes. If he succeeds in reducing his respirations from twenty even only to ten per minute and the

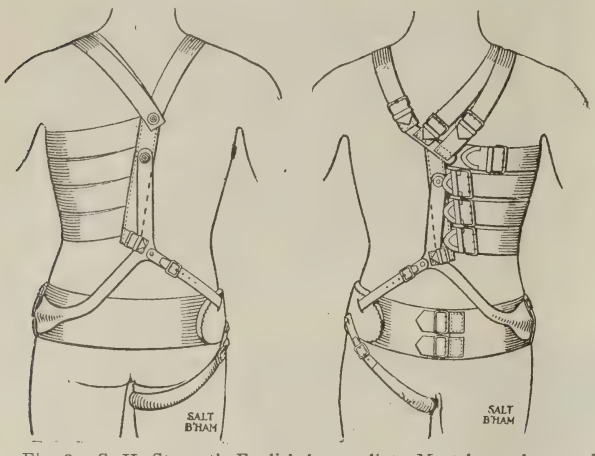


Fig. 8.—S. H. Stewart's English lung splint. Must be made according to measurement. Obtainable from Dr. Stewart, Edinburgh, or through American dealers in instruments.

periods of several minutes of rest breathing arrive at a total of five hours, he will have saved his lungs three thousand respirations or six thousand movements. Let him also bear in mind that by this physical and mental rest his pulse will become slower and his heart more quiet, and that this rest breathing cannot possibly harm but can only benefit his general condition.

When one considers that by this method of breathing not only the lungs but the heart also is spared many a movement and energy is thus preserved to a considerable extent, its value must be obvious. According to the latest edition of Howell's textbook (13), the total work done by the left ventricle at each systole is equal to 20,085 grams centimetre. By reducing this to pounds and feet, it figured about one and a half foot pound for each contraction of the left ventricle. Lawrason Brown (14) estimates that the right ventricle does one half pound of work. This added would make the work performed by the heart about two pounds for each systole. Thus if with each normal heart beat an energy equal to two pounds is exerted, and by reduced and restricted breathing we save the heart two or three contractions per minute, we spare the heart from 1200 to 1800 foot pounds of energy in five hours.

Diaphragmatic breathing will also cause a better circulation in the lower extremities and abdominal viscera, especially aiding the hepatic function, all of which is so essential for patients who are ordered complete physical rest on a reclining chair or in bed.

I have been asked whether women who, for biological reasons, do not use the diaphragm in breathing as much as men do, can adopt this physiological adjuvant. Whether or not it is because of the abandonment of tightly laced corsets that I have had no difficulty in this respect, I do not know. At any rate, I have also the assurance of Professor Joel E. Goldthwaite, of Boston, who has had such a large experience with cases in which he prescribes diaphragmatic breathing in order to correct faulty conditions due to postural or typical orthopedic deformities in women, that he has no difficulty whatsoever in making his female patients use diaphragmatic breathing.

When one starts out to recommend any new therapeutic measure for pulmonary tuberculosis, he should be most careful not to venture into this dangerous field without having counselled as many of the best minds as possible, and only after having their approval should he venture to give his suggestions to the medical public. I began my work on controlled diaphragmatic respiration while still in the United States Public Health Service at Hospital No. 61, later the Veterans Bureau Hospital at Fox Hills, New York. We had a great many tuberculous exsoldiers to take care of there. I made a report on my first experiences with controlled diaphragmatic respiration to the Surgeon General of the Service, and after confirmation by the Research Bureau I received the authorization for its publication. In the meantime I had written to a great many of our leading physiologists, clinicians and therapeutists to get their opinion and reports on the subject.

It would take far too much space to reproduce here all the opinions on the physiological soundness of this adjuvant or give the many clinical reports which have since come to me. I can quote only a few of them:

Sir Clifford Allbut, Regius Professor of Oxford, England: "The description of your method is lucid and reasonable and I have referred your system to the staff of our tuberculosis colony at Papworth."

Dr. Samuel W. Lambert, Professor of Medicine and Dean Emeritus of Columbia University Medical School: "I think you are presenting a new therapeutic measure and it will be a pleasure to cooperate in every possible way."

Dr. Louis W. Warfield, Professor of Internal Medicine, University of Michigan, writes: "It sounds very logical and it would seem to have a very definite place in the treatment of tuberculosis of the lungs."

Fig. 7.—St. Louis Pneumatic Pulmostate. A chest splint made according to measurements by the Therapeutic Appliance Corporation, St. Louis, Mo.

The clinical results have thus far been as encouraging as the physiological deductions. From the letter received from the Barlow Sanatorium, where Dr. George Dock, with the assistance of Dr. Munford Smith and Dr. O. F. Henning, carried on lengthy and extensive experiments, I quote the concluding remarks, which are as follows:

"Your method is a useful addition to the class treatment of tuberculous patients. The demonstrations and questions raised give many opportunities for learning the many problems and inhibitions of the 'lunger.' Like all methods that lead to closer cooperation between patient and therapeutists that work has had a distinctly good physiological effect. In written reports I have had the patients give me, I find

such statements as the following: Helps to relax, quiets the heart, lessens fatigue, increases endurance. I have a very strong impression that the more intelligent the patient the more benefit is he likely to receive from carrying out your adjuvant along with the other necessary measures."

Dr. M. Jacob, of the Eagleville Sanatorium, Pa.: "I feel happy to be able to report to you the number of cases which gave such astonishing results. Two cases in particular were of such character that I gave a very unfavorable prognosis when they first came under my care, but at present their recovery is practically assured, thanks to the restricted breathing which you have suggested not long ago."

FIG. 9.—Knopf's saddle bag for standing and recumbent position. Its pressure on the chest can be regulated in the standing position with the aid of straps or bands, in the recumbent position by the amount of lead shots or sand in the bag.

Dr. J. O. Marien, formerly in charge of the Gabriels Sanatorium, himself a tuberculous invalid, now of Saint Esprit, Quebec, writes: "I have tried your method with a number of patients at the sanatorium and can tell you that the results have been very encouraging. I have practised the diaphragmatic breathing myself since last July and the method has been most beneficial. My cough diminished considerably and is virtually gone now and so has the expectoration; the pain in the chest has entirely left me. Of course, I continue to practise the method which I consider one of the best adjuvants in the treatment of pulmonary tuberculosis."

The improvement or cure in any one particular case, as the result of any new treatment or therapeutic adjuvant in pulmonary tuberculosis, may have little value in itself and so only after giving the foregoing reports of a relatively large number of cases, would I wish to speak of the following one as a unique example to physicians and patients, of what will power and determination can accomplish when the suggested method is systematically carried out.

The following letter, which I received after the publication of my first extensive report on the results of diaphragmatic respiration, I have had no opportunity to publish before. Although I have now lost trace of the case, the report is as valuable, inspiring and helpful today as it was at the time it was written. The writer, an inmate of the United States War Veterans Hospital No. 60, at Oteen, N. C., sent this message unsolicited and without direction of his physician:

Oteen, N. C., February 28, 1925.

Dear Doctor Knopf:

About two years ago Dr. George S. Spence of this hospital, in a lecture to his ward patients spoke of your diaphragmatic breathing exercises. I took up the same (the last straw to me with far advanced pulmonary tuberculosis in all lobes with extensive cavitation in left lung and getting over a hemoptysis of date November 21, 1922). I put in a few minutes each day increasing the time per day as well as times for the day for taking this treatment. Having spent thirty-seven years as a compiler and statistical man for the Government, I put my efforts in "system" and have kept a complete record. For over a year I have put in four intervals of one hour each daily in slow diaphragmatic breathing. I can now get on with less than one respiration per minute per hour and do so with ease.

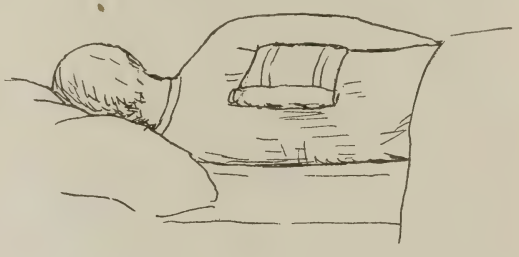
My x rays taken in six months intervals have been "conferenced" and show steady improvement. I have no doubt Dr. Spence would be glad to give you the clinical data and I will be glad to send you my original records and continue to send same each month. I have been on moderated exercise nearly twenty months and am feeling fine. Dr. Spence gives your treatment that credit for this wonderful change in my condition. He calls it "phenomenal." I think the accurate data will be of value to you and it's yours, Doctor, if you wish it.

With kindest regards to you and thanks that this treatment was available to me, I am, Sir,

Very truly yours,

B. C. Washington, Jr.

I allowed some time to elapse before writing to Dr. Spence for confirmation of the case. He graciously confirmed Mr. Washington's report in every respect. He doubtlessly will also do so to any one who may doubt the almost miraculous result of a simple treatment, available to all and as free as the air we breathe.



One word about the contraindications. A terminal case should be made comfortable by all possible means, and if controlled diaphragmatic breathing causes the tuberculous patient physical or only mental discomfort it should not be resorted to. There are also other contraindications, such as involvement of the lower lobes and pleuritic adhesions to the diaphragm so that diaphragmatic breathing is accompanied by pain. Pleuritic intestinal or peritoneal involvements which cause pain with diaphragmatic breathing are, of course, contraindications. Strange as it may seem, emphysema is sometimes relieved and sometimes aggravated by diaphragmatic breathing; the surest way is not to use it when it causes pain, increases cough, or discomfort.

In a complete or partial artificial pneumothorax controlled diaphragmatic respiration is not contraindicated unless it causes pain, discomfort, cough or distress. When at rest, in a recumbent position, the patient needs less oxygen for sustenance, and when the lower portions of both lungs are in fairly good condition dyspnea will rarely accompany or follow diaphragmatic breathing. In most cases the collapse is usually confined to the upper and middle portions of the lungs. During this rest breathing the lower portions of the lungs are doing the work and their better ventilation can only be considered beneficial.

Bearing in mind the contraindications just enumerated, the treatment can easily be employed in all stages of the disease, except in absolutely terminal cases. Even in ordinary third stage cases, when by patient teaching of the modus operandi the invalid can be made to realize the advantage of the procedure, it is bound to do him some good and relieve whatever distressing symptoms he may have. The only cases in which the treatment is really useless

are where the patients are too lazy or too indifferent, or for other reasons unwilling to carry out the instructions for reduced and diaphragmatic breathing.

The most satisfactory results from this physiological adjuvant to the rest cure of pulmonary tuberculosis can naturally be obtained in a sanatorium or hospital where the patients have come, so to speak, to occupy themselves with getting well, unless the patient has the "sanatorium treatment at home" under careful medical supervision.

Our great surgeons have of late provided us with another method of giving local rest to the invaded lung. The surgical manipulations to attain this end are manifold, such as phrenicotomy or avulsion of the phrenic nerve. This operation has for its purpose to paralyze the diaphragm and thus by its elevation reduce the lung volume. Another operation is Tuffier's extrapleural pneumolysis for apical tuberculosis, and last the all important extrapleural thoracoplasty. As to the indications, merits and technic of the various operations I must refer my readers to some of the many American and European authors who have so ably discussed the subject. For example, Alexander (15), Archibald (16), Brauer (17), Graham (18), Hedblom (19), Lilienthal (20), Willy Meyer (21), Sauerbruch (22), Saugman (23), Torek (24), Tuffier (25), etc. We phthisiotherapeutists are indeed greatly indebted to our surgical colleagues for having restored by extrapleural thoracoplasty and similar operations many a case which heretofore had to be considered as absolutely incurable. These operations, seemingly very serious and heroic, have restored not a few apparently hopeless cases to relative health and vigor.

Our thoracic surgeons are improving their technic and precautions constantly, thus lessening the seriousness of thoracoplasty and reducing the mortality of cases submitted to the operation to a minimum. As recently as November, 1926, Dr. C. H. Hedblom writes in the *Chicago Sanitarium Bulletin* as follows: "During the past eighteen months I have performed an extrapleural thoracoplasty on fifteen patients ill with pulmonary tuberculosis. All of these patients have improved, most of them to such an extent as to be practically symptomless, and all have gained in weight and strength."

May I say in conclusion that there is no question in my mind that the physician, particularly the skillful phthisiotherapeutist, who resorts to what we know today to be feasible to obtain general and local rest, will know when a case demands the aid of the thoracic surgeon, and thus will rarely fail to help his patients. To make himself thoroughly familiar with the psychical and mental state of the patient, will of course be equally essential and of an invaluable help. The success of the Christian Scientist in curing a so-called imaginary or functional disorder and at times making the patient feel better even when suffering from an actual organic disease, rests upon autosuggestion or suggestion by the socalled "practitioner," or both. The regularly educated physician with his training in pathology, diagnosis, and rational therapeutics, should and could do a great deal better than the Christian Science practitioner, usually totally ignorant of the science of medicine and surgery.

This autosuggestion or the physician's suggestion should not by any means consist of the absurd negation of the existence of disease, but by the patient's determination to get well, by the realization that the less his mind dwells on pain and discomfort the less he will feel and be aware of them. The physician, in his suggestion therapy, should work along the same line of thought and impress upon the patient the power of mind over body. The deeply religious patient must be told that prayer alone does not always help, but that there are many things God does not do until man cooperates with him. Persistence in optimism, cheerfulness, obedience to the physician's directions, and patience are some of the things which man can do for himself as coworker with God.

If the patient's condition is hopeless, assure him that by his concentration of mind on other matters not relating to his disease he will be more comfortable. Helpful medication is of course indicated in such a case. If there is a reasonable chance for improvement we should make the invalid feel that by directing his thoughts to improvement, he will improve. Favorable cases should be particularly impressed with the fact that their will to get well will help them materially toward recovery. I do not think that actually deceiving the patient about his condition is a wise policy; neither do I think it judicious to be so absolutely sure about complete recovery in even seemingly favorable cases. The greatest diagnosticians have, to my knowledge, erred in this way. With a little tact and skill one can always make hopeful suggestions without a definite prognosis.

Of course, the modern phthisiotherapeutist must be imbued with the great work which his high calling demands. He must be a doctor of the mind, body and soul, *"ein Arzt des Leibes und der Seele,"* as the Germans poetically call their great physicians. He must bring to his task a sympathetic heart and all possible gentleness and patience. At times, firmness may be essential, but this, too, can be expressed in such a way as not to make the patient feel unhappy. When the latter can be made to realize that his physician is his friend and really interested in his case, when the confidence in his medical adviser is unlimited, the battle is half won, and if it is humanly possible to restore the patient to health and vigor, he will be restored.

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A complete list of references will be included in the author's reprints.

Chronic (Streptococcic) Hypertrophy of the Lower Lip

With Report of a Case

L. G. BEINHAUER, M.D.

Pittsburgh, Pa.

The reported cases of chronic hypertrophy of the lower lip due to the streptococcus are few.

Sequeira (1) reported a case of a girl aged seventeen, in which an acute swelling of the lower lip, resembling an attack of erysipelas, developed following an attack of facial palsy. The swelling subsided temporarily but after a series of attacks remained chronically enlarged complicating the facial palsy. Pernet (1) discussing Sequeira's case, recalled a similar case, seen with the late Radcliffe Crocker, of an old woman whose lower lip was involved. Wylie (2) reported a case of a young girl who developed a similar condition of the upper lip following vaccination. The patient also presented an interstitial keratitis, Hutchinsonian teeth and other stigmata of congenital syphilis. Gougerot (3) reported a case in a man, a cornet player by occupation, who developed a chronic enlargement of the lower lip presumably from an infection through an abrasion of the lip contracted while playing his instrument. White (4) reported a case in a young adult following a nasal eczema and was associated with edema of the face, carious teeth, and pediculosis capitis.

Questionable cases have been reported by Malherbe (5) and others (6).

Case.—J. N., aged nineteen, baker, presented a persistent swelling of the lower lip. The patient stated the condition developed from a fissured lip which he had three years previously. One week following the fissure, he noticed a marked swelling of the lip which lasted for one month, following which all swelling subsided. Since that time recurrences of the swelling have been frequent and at one period in the past two years the swelling subsided for one month, that being the longest period of freedom from attacks. For the past year the patient has had no relief from this condition and the chronic swelling has remained without any change at any time. Previous to being referred to me, the patient had two operative procedures, probably lymph drainage, each of which failed to produce any improvement. Following the operations, five filtered röntgen ray treatments were given with no beneficial results. The patient stated that an attack of cold in the head might precipitate an attack of swelling.

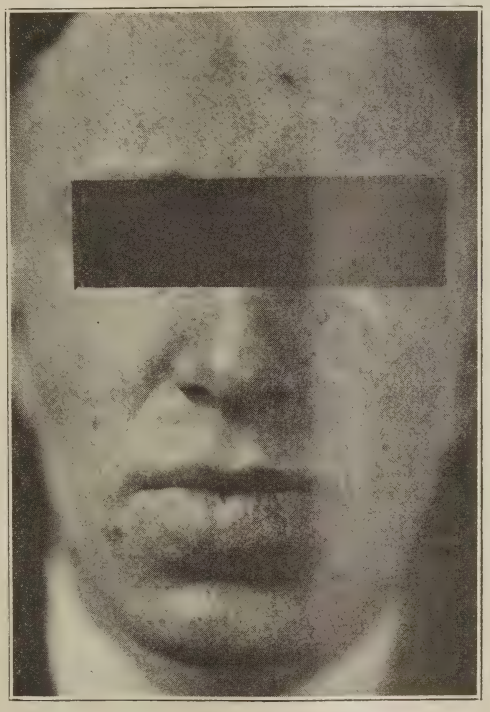

Fig. 1.—Note the rolled out mucocutaneous border, the healed median fissure, the thickness of the lip and scars from previous operations are present.

The lower lip showed a marked swelling involving the entire structure. The lip was bluish red, soft and very edematous at the first examination, although at subsequent examinations the consistency was more firm and interfered with his eating and speech. The mucous membrane was thickened and shiny and the mucocutaneous border varied from one half to one inch away from its normal site while the lip measured one or more inches in thickness at varying intervals. Scars were present on the skin and mucous surfaces, indicating the sites of previous operations. A healed scar located the original fissure. The teeth were fairly good with, however, moderate pyorrhea.

The tonsils were small, atrophic and with no evidence of inflammatory reaction. The mucous membranes were negative. The tongue was scrotal in type, apparently too large for the floor of the mouth. There was a slight accompanying glandular enlargement following the deep anterior cervical chain. The physical examination otherwise was negative. Röntgenograms of all teeth were negative. The blood Wassermann was negative. Cultures from the tonsillar crypts and teeth revealed a mixed Staphylococcus albus and a Streptococcus viridans. A lymph puncture was made from the deeper structures of the lip and a Streptococcus viridans was recovered.

An autogenous vaccine was made and the patient was given frequently repeated small doses with gratifying results. The lip was reduced half in size and the patient was comfortable having no disturbance while eating or talking. Ultraviolet ray exposures were given and the patient remained comfortable until the fall when following a head cold the swelling returned. At that time a thorough search was made of the nasopharynx and the tonsils were condemned and removal advised to which the patient would not consent. A lymph puncture was made and corroborated the previous findings. Ultraviolet therapy and an autogenous vaccine gave relief. The case was presented before the fourth annual meeting (1925) of the Pittsburgh Dermatological Society under the diagnosis of chronic streptococcus lymphangitis and therapeutic suggestions were asked. Radium was offered and accordingly, filtered radium applications were applied, giving no marked curative effects but instead the lip reduced somewhat in size and assumed a more solid consistency which becomes painful and

tender with recurrent attacks of swelling. Since first seen the patient had six attacks, each of which subsided under vaccine and ultraviolet light therapy.

ETIOLOGY

This condition is supposed to be more prevalent in people constantly irritating the mucous membranes of the lip; such as, musicians, glass blowers, and smokers. Constant biting of the lip is also a predisposing factor. It may follow erysipelas, eczema or other facial infections always gaining entrance through a fissured or abraded mucous membrane. Both sexes are equally attacked. The condition is chronic but is subject to acute exacerbations. Focal infection about the teeth, intranasal regions, tonsils and adenoids plays an important part in its production.

SYMPTOMS

The condition may give local or general symptoms depending upon the severity of the infecting organism. A feeling of tenseness and weight with occasional obstructive symptoms to eating and talking and pain are the common symptoms. The clinical picture is constant in all reported cases giving a tender, red, greatly swollen everted lip presenting a glazed, slightly thickened mucous surface with the portal of infection usually present. The glandular involvement is very slight.

This type of chronic hypertrophy must be differentiated from the group macrochilia due to neoplasm, tuberculosis, syphilis, filariasis, injury, hypertrophy of the mucous glands and other allied groups. Elephantiasis, chronic lymphostasis, macrochilia and chronic hypertrophy have been used interchangeably but chronic streptococcic hypertrophy of the lower lip is favored as the name of choice because it is the most descriptive.

TREATMENT

The treatment of this condition is very unsatisfactory. Radium and röntgen rays are of no benefit and are advised against because of the resultant fibrosis produced. Local injections of thiosinamine have no therapeutic value. Surgical procedures may be tried but give no permanent benefits. Of these the simple lymph drainage, the Handley and the complicated Kondoleon operations are the choice. Extirpation of the adjacent lymph glands offers another surgical procedure. The most effective treatment to combat the acute condition is repeated injections of small doses of autogenous vaccine. One must remember that any treatment used is only a palliative measure offering a partial reduction of the swelling and a temporary relief from its symptoms.

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5026 Jenkins Arcade.

A Case of Penetrating Gastric Ulcer Healed Medically*

MONROE B. KUNSTLER, M.D.

New York

Our best judgment in the care of a patient is at times influenced by the circumstances of the case and the result may be a startling surprise to us as in the following case:

Case.—Mr. B., aged sixty-nine, salesman (referred by Dr. Lebenstein), first consulted me on November 19, 1924, with the following history: Two weeks previously, having been well up to then, he was seized with a sudden pressurelike pain in the epigastrium which radiated around the waist. There was no nausea, vomiting or black stool at any time and the appetite remained fairly good. The pain was constant with only slight relief from sodium bicarbonate and had no relation to food intake. There was moderate belching which relieved somewhat but no heartburn or regurgitation. Weight remained constant and he continued his work, which necessitated a great deal of walking. His habits were regular and the past as well as the family history were negative.

Physical examination showed a well preserved man with normal findings as to lungs, heart and abdomen except for a moderately enlarged and tender liver and tenderness in the epigastrium. No mass could be felt at any time but at certain periods rigidity could be determined in the left upper quadrant. The blood pressure was 130-80, weight 132 and Wassermann negative. The stool was negative for blood and the test meal showed free acid 20, total acid 30, blood negative, and much pus. At times there was a moderate retention of his breakfast for three to four hours as revealed by stomach washings. Under simple therapy he remained well until the

*Read before Mount Vernon Medical Society.

FIG. 1.—X ray photograph made in January, 1925, showing a large diverticulum in the posterior wall of the stomach.

beginning of January, 1925, when his appearance suddenly changed, there occurring a rapid loss of weight from 132 to 113 pounds with the development of a severe cough. The sputum was negative.

A röntgenological examination at this time (Fig. 1) showed a large diverticulum arising in the posterior wall of the stomach which was apparently due to a penetrating ulcer. When the stomach was completely full the sac could not be seen, but when about half the meal had been evacuated, it became clearly visible (Fig. 2). The question of malignancy arose owing to rapid loss of weight and a sudden onset of symptoms in a man of this age. But this point could not be definitely settled. Obviously surgery was indicated but owing to the patient's very poor condition and realizing the extent of the operation, medical

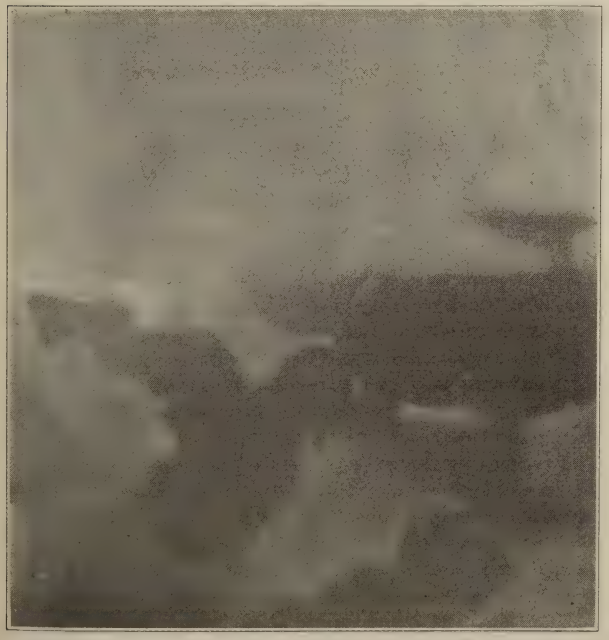

FIG. 2.—X ray photograph taken at the same time as Fig. 1. The diverticulum is clearly visible, about half the stomach contents having been evacuated.

treatment was decided on after due consultation with the family.

He was carried along on a strict modified Sippey diet for some weeks and the relief was almost instantaneous. The pouch gradually became smaller as revealed by fluoroscope and the weight increased rapidly so that by March 8th, he again weighed 132 pounds. The severe cough improved with the amelioration of his stomach symptoms. An x ray taken September 30, 1925 (Fig. 3) showed no diverticulum nor did careful fluoroscopy reveal any trace of the former condition, although a slight irregularity can still be seen on the lesser curvature. His weight is now 143 and though on a liberal diet, there is absolutely no return of any of the gastric symptoms. As a matter of fact he feels better than he has for many years.

While the time is too short to claim an absolute

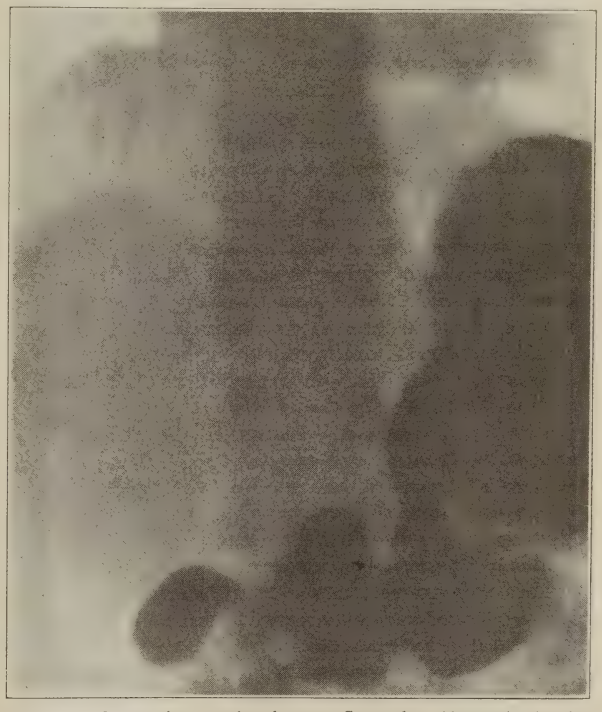

FIG. 3.—X ray photograph taken on September 30, 1925, showing no diverticulum. A slight irregularity on the lesser curvature can still be seen.

cure, still this is a symptomatic and röntgenological cure without any evidence at the present time of a recurrence. It demonstrates the marvelous healing power of the stomach and also of the fallacy of the theory that all penetrating ulcers on the lesser curvature need surgery. Unless there is extreme urgency, it is wise to give this type of case the benefit of medical treatment.

An interesting feature of the case was the development of the cough with the onset of severe gastric symptoms and its disappearance with the healing of the diverticulum. This was probably reflex in nature and due to irritation of the vagus ends in the stomach.

I wish to express my thanks to Dr. Lesser B. Groeschel for assistance in making the x ray examination.

At this time, October 1, 1926, the patient is still quite well.

207 WEST NINETY-FIRST STREET.

Sex and Psychoanalysis

THEODORE SCHROEDER
Cos Cob, Conn.

First let me express some words of caution. Psychoanalytic theory is still in the making. Psychoanalysts manifest different degrees of freedom from unconsciously determined compulsions, as well as a great diversity in the quality and quantity of their experiential and cultural acquisition. Accordingly, there are great differences of emphasis, and some difference in the resultant psychological theory. To be fair, therefore, you should hold no one responsible for my views, but myself. I wish also to caution you that I do not expect to convince anyone, of the correctness of my views. The acceptance of these formulations is usually of little value, except when it is the product of a psychoanalytic discipline. Without that there will be too little of similarity in the related mental content. Therefore, I make no logical defense of my position and remain content with merely describing it.

I will weave my description of the psychoanalyst's attitude toward sex around a popular criticism aimed against psychoanalysis. I refer to the accusation that psychoanalysts overemphasize the importance of sex. Those who are the victims of even an unconscious subjective moralistic conflict, arising from their own psychosexual past, cannot be wholly comfortable, nor inwardly calm, in the presence of such dispassionate frankness, as that exhibited by psychoanalysts. This is so because by contrast and its negative suggestion, the psychoanalysts' discussion is sure to stimulate toward consciousness some thought or experience which would be painful to contemplate, in the presence of other persons, because of the existence of irreconcilable impulses in relation to it. Also, there is often an unconsciously determined anxiety, or a half conscious haunting suspicion that the psychoanalyst has an uncanny capacity for penetrating the secret recesses of human experiences, and discovering that which we are most anxious to conceal, or to deny. There is a third factor involved in this emotional aversion to psychoanalysis. Most of the victims of a subjective moralistic conflict rationalize one or another aspect of that conflict, so as to create an emotionally glorified and idealized self, quite out of harmony with the real personality, when considered as an organic unity. The cold hard scientific attitude and method of the psychoanalyst, is somehow instinctively and vaguely perceived as a constant menace to such secret delusions of grandeur, and to their fictive rationalizations.

Because the critics complain of our findings, apparently without understanding and certainly without criticizing our method of observation, we see the subjective moralistic conflict of impulse as being the more immediate emotional determinant for most of the adverse criticism that is being made of psychoanalytic hypotheses. This is so, because the psychoneurotic has an emotional need for publicly maintaining a high moral value for his delusional theory of the facts of life, which theories and valuations conflict with the realities as these are found by the use of the psychoanalytic method of observation. The problem is all the more difficult for our critics, because of the many unconscious factors involved in all such conflicts of irreconcilable impulses.

From the psychoanalytic viewpoint, such words of criticism as have been uttered, or any other words for that matter, have little meaning until we reinterpret their acquired dictionary definition, in relation with the subjective context, within those who now use the words. A phonograph, a parrot, an imbecile, a lunatic, a moron, a metaphysician, a clergyman, a philosopher and a scientist can all be made to affirm, or disaffirm, a belief in the psychoanalyst's overemphasis of sex. However, from the mere declaration itself you get little or no information as to the mental content, if any, represented by the words. In other words, the psychoanalyst is little concerned with the words of such criticism, and puts all his emphasis upon the psychological how and why of their being used. The words of the criticism are mere symptoms, which can be adequately understood only in relationship to their entire subjective context, especially the past personal psychological experiential causation for their use.

It is of course possible that the quoted criticism is determined quite exclusively by the inductive use of objective considerations and data, or of subjective data consciously projected and impersonally viewed. But it is also possible that such a criticism is all but wholly determined by unconscious subjective factors. If so, then it is even probable that the criticism is a mere psychoneurotic's wishfulfilling phantasy, constructed as if for a mask with which to conceal an unconsciously determined and more or less morbid sexual obsession. I will suggest some of the methods by which a psychoanalyst might proceed in order to decide to which class any given critic's judgment may belong.

The psychoanalysts maintain that their claims about sex are the product of a new method of observation, and not a mere logical inference from a common stock of previously known material. To them it seems quite childish to quarrel about the results of their method, if there is no understanding or criticism of the method itself (1). If any of the critics are really objective and scientific, they would understand the psychoanalyst's claims as a challenge of method. Not one of the critics of psychoanalytic theory has found it convenient to criticize the psychoanalyst's methods of observation, or to exhibit his own intellectual method for comparison, as a competition in the relative maturity of intellectual methods. Hence we conclude that the critics are not functioning on an objective and scientific basis. This inference is further confirmed by the fact that the critics are content to make logical argument and a special plea in support of their preconceptions of what the truth about sex ought to be. Most of the time this appears to psychoanalysts as if it were a vindication of a psychoneurotic compulsion.

As a result of extended psychogenetic studies of emotional disturbances, the psychoanalysts invariably

find that the preadolescent and prepubescent sexuality plays an important but unconscious rôle in the causation of the emotional instability. In this connection the critics of psychoanalytic hypothesis have been challenged to produce, even a single case of psychoneurosis which, in the light of a psychogenetic disclosure, fails to reveal such determining sexual component. So far as I am informed, no such case, thus investigated, has ever been produced by the critics. Again we conclude that their criticism is not objectively nor scientifically conditioned. The suggested alternative is that such criticism is a mere wishfulfilling phantasy, brought into being by the necessities of a psychoneurotic's unconsciously determined emotional defensive necessities. Psychoanalysts may still be wrong, even though their present critics are entitled to no credit.

In one sense it is perfectly true that the psychoanalyst overemphasizes the importance of sex. It may be said that psychoanalysts specialize on those emotional disturbances centering in sex. Accordingly they overemphasize sex, in the same way in which an astronomer gives relative overemphasis to the movements of heavenly bodies, in comparison let us say with his interest in sociology or embryology. But it is more or less evident that this is not quite what the critics of psychoanalysis mean. We suspect that most of such critics mean to reproach us, and the mere selection of sex as a specialty cannot well serve as a reproach. Since our method of observation is also passed without criticism, the conclusion is forced upon us that what is objectionable to our critics is the psychoanalyst's whole attitude of mind toward sex, even more than the tentatively formulated products of his research. So we come inferentially to the conclusion that perhaps the criticism of psychoanalytic hypotheses is determined by a psychoneurotic's fearful resentment of a method which threatens to uncover his defensive mechanism, and to depreciate its moralistic mask. Perhaps the same psychological facts may be expressed as a psychoneurotic's resentment of his inability to maintain an imperturbable calm, in the face of a perfectly frank, public sex discussion, conducted in actual scientific dispassion.

However, there is something more to be said in justification of the critics. The psychoanalysts, on the whole, are concerning themselves primarily with the cure of functional disorders of the nervous system, and they find, as a fact of observation and not as a logical inference, that in such disorders there is always involved some psychogenetic sexual factor. That finding may be corrected by more and better observation. It can not be corrected by pure logic, nor by special pleas, or question begging, moralistic epithets, such as are used in the justification of popular sexphobia, masquerading as moral superstitions. Let us contemplate just a minute what the facts of life are, and see whether we cannot, even by logical processes, give some support of probability for the claimed facts of the psychoanalyst's observation.

Assume now, that the organism can be so viewed as to exhibit trends that can be labelled as life promoting and death promoting, which are both at work in all of us. As we look around us in times of peace, we can find little obvious emotional disturbances which give evidence of originating in the ordinary emotions which centre around selfpreservation. This is so because here our adjustments are relatively easy to make, in that they are relatively free from environmental interference. When there is no war, there is for most of us no such great anxiety, as there presumably was with the primitive man who had great difficulty in wresting his food supply from nature. For most of us, in our youth, that is now pretty well taken care of. It is quite different with the sexual impulses. Here, at least from early childhood until about twenty-five, external powers of coercion tend to enforce upon us biologically or psychologically unwholesome sexual lives. Even after marriage, economic factors and ignorance often prolong the difficulty. The primitive man, on the contrary, found it easier to live out, and to fully act out his reproductive impulses. We do not. It would therefore be very strange if the emotional disturbances, which the psychoanalysts are called upon to deal with professionally, did not have practically all of the time some important involvement of the emotions which centre around sex.

Psychoanalysts also find it to be quite accidental if we live even approximately wholesome sexual lives. Also: the emotional tones and values with which we come away from our earlier encounters with the sexual problem become the dominant emotional tones and values with which we are compelled to approach every other problem of life. In other words, if we become unduly impressed with fear, with shame, with uncertainty, doubt, or anxiety, or with calm confidence and optimism, because of the way in which we have managed our sexual impulses, then we unavoidably carry such dominant feeling tones and values into every other activity of our lives. Because of the relatively abnormal intensity which is imposed through social taboos and its resultant ignorance and socalled moral distortions, and the compulsory unwholesome living, the erotogenetic and more or less morbid valuations become the dominant characteristics with which we approach all the other problems of life, precisely because these habitual emotional attitudes have become the dominant affective essentials of our character. Even as a matter of mere logic it can therefore hardly appear otherwise. However, with the psychoanalyst this conclusion is based upon observation and not upon such logical inferences.

Another subdivision of the criticisms, which say that the psychoanalysts overestimate the importance of sex, rests upon our claim that there is such a thing as preadolescent sexuality. Perhaps you can achieve something of the feeling of probability if you remember that the Freudians consider that the human animal is an organic unity. Adolescence and pubescence produce nothing entirely new. They are but the fruition of processes that have been going on more or less unconsciously, from long before birth. Of course none of us will ever become fully conscious of all the factors and relations of our development. Psychoanalysts only insist upon the desirability of our enlarging our consciousness of these matters. Now then, the Freudians find, as the result of their observation, that this preadolescent "sexuality" has its own manifestations, its own experiences, develops its own sense of values, emotional tones, and ideational associations and reaction patterns, and so fixes the preparedness with which young people face the storm

and stress of pubescence and of adolescence. It is precisely because the infantile and childhood sexuality does that, that it also measurably predetermines how we go through it, and how we come away from it. So the preadolescent sexuality is, from the psychoanalytical point of view, a very important thing in the development of personality, and is one of the things which, in the near future, educators and parents will perhaps give a predominant place in the development and education of future generations. It is in this preadolescent sexuality that we find the important determinants for our later unconscious mentation.

Upon this unconscious mentation is based another criticism of psychoanalysis. The Freudians find, as the result of their investigation, that only a small percentage of the actual effectively working impulses are conscious to any of us, especially as to the subjective contribution to their determinants, unconsciously coming from out of our preadolescent eroticism. The great mass of the determinants for our conscious thinking and our actual conduct has, among the now unconscious data, most of our psychological past. Only a small fraction of this is any part of the conscious considerations at any time, especially when we are called upon to act or to consider a new problem.

Out of this concept, of the large unconscious factors in our thought and action, comes the psychoanalyst's theory as to the reconstruction of the personality. He assumes that every one's personality is the inevitable consequence of the entire psychological past. If you find yourself unhappy, if you find yourself inefficient in making your ordinary social or economic adjustments, the changeable determinants must be found primarily in that psychologic past, and all remedial measures must begin with the enlargement of our consciousness thereof and of the relationship of our past with the difficulties of the present, and the better coordination of all this according to maturer intellectual methods.

So far we have seen only those logical considerations which may make the psychoanalytic theory look a little more probable and so stimulate a favorable curiosity toward the matter of getting a first hand acquaintance with it, by submitting to a psychoanalytic discipline. Let us return to the critics. The critics of psychoanalytic hypotheses often assert that Freudians see in human nature nothing but sex. Thus the critics show their own sexual obsession. If they were not so much obsessed by the necessity (perhaps an unconscious urge) for selfprotection against a shameful, fearful or anxious attitude toward their own lewdness, more of them would have discovered that Freudians have repeatedly said that the libido or human energy expresses itself objectively and predominantly through two impulses. The first was characterized as the ego impulse, the impulse that makes for selfpreservation. The second is the sexual impulse, which makes for race preservation. The pursuits induced by the food hunger and sex hunger are among the more conspicuous manifestations of these two impulses.

Since Freudians have gotten farther away from the descriptive method, and talk more in terms of natural processes, sex becomes quite incidental. Then we see only conditions and behavior that make for a fuller and maturer psychological life, and those other conditions and the resultant behavior, which promote regression from a psychological toward a biochemical mode of functioning. The end product of this deterioration means the death of the human organism. When we view the psyche from the standpoint of an evolutionist who is studying the mechanism of a behavioristic subjective process, sex becomes a mere incidental conditioning factor. But there is another reason, perhaps, why the critics can not see this. They have a psychologic compulsion which makes for being easily misled. They need the soothing effect of finding and discrediting in others, those things which exist primarily in themselves, and about which they act, chiefly through unconscious mentation, as if they were endeavoring to conceal the same from themselves as well as from others.

What then is the psychoanalyst's conception of a scientific attitude toward sex problems? First of all one must be as free from emotional disturbances over every possible manifestation of sex, as the best poised astronomer is free concerning theories about the movements of the heavenly bodies. When dealing with the subject of emotions centering around sex, this unemotional viewing of sexual phenomena is doubly important, because doubly difficult of achievement. When emotions and their unconscious determinants are the subject matter of observation, one's predispositions find less ready means for checks and corrections than are at the command of the astronomer.

From the psychoanalyst's viewpoint this comes with peculiar force because he finds the determinants of our predispositions find their roots largely in infantile and childish experiences, which now constitute an important part of our unconscious mentation. Among these factors the preadolescent and prepubescent sexual development may be controlling. Because of such facts many psychoanalysts assert that no one is really competent to apply, or to criticize psychoanalytic hypotheses, until after they have become conscious of those determinants of their behavior and thought, which usually work below the surface of consciousness. In other words one's relative competency depends upon the relative degree to which that part of our mental life which usually works below consciousness has been made conscious, by submission to a Freudian psychoanalytic discipline or otherwise.

A second standard of efficiency is the relative degree to which the unification of one's interest has proceeded toward an obsession with mature intellectual methods, as a means of promoting our own well being and better social adjustments. It is only according to our relatively wholehearted devotion to, and adequate understanding of what may be meant by the subjective aspects of the maturity of our intellectual methods, that we can efficiently and happily make those coordinations which will operate as checks and correctives to the former unconscious controls of our psychic life.

For many minds there is another rock of offense in psychoanalytic presuppositions.

The psychoanalyst, following the physicist, quite consciously proceeds upon a similar presumption of natural law, and of a rigid psychologic determinism. Again, the object of his research is to discover ever

more of the hitherto unconscious, subjective, conditioning factors of our psychologic imperatives, and a growing clarity in his vision of the subjective aspect of our psychologic processes. If the psychoanalyst has reached a stage of development in which he is able to act in approximate harmony with the hypothesis of a complete and rigid psychological determinism, he will have outgrown all moral values and judgments, even about sex. No psychoneurotic can be comfortable without a moralistic rationalization of his erotic compulsions. The essentials of the psychological factor are the same, whether the moral creed is conventional or unconventional. From this viewpoint there is no necessary implication of progress in the substitution of new morals for old. Whether any progress is to be inferred under any circumstances, does not then depend upon our approval or disapproval of any particular moral creed. Intellectually we are alike in our indifference to all moral creeds. We may still have a feeling-preference for some line of conduct, but we have become too objective to impose our desires upon the other fellow as his moral duty. Neither do we glorify our subjectivism, when we become conscious of it. On the contrary we at once look for those checks and correctives, required by our conception of mature intellectual methods. This nonmoral attitude is offensive to most psychoneurotics, because they cannot easily get along without a moralistic explanation and glorification of one of their irreconcilable erotic trends. Their aversion will be as intense as the subjective conflict of impulse is acute.

Since some of us deprecate *all* moral values, and esteem all moral dogmas as useless, we never find any real psychosocial progress to be achieved through moral appeals. Indeed it is precisely because all moral appeals are unconsciously and subjectively conditioned, and are emotional in their nature and effect, and so tend to intensify, glorify and perpetuate the infantile method of thinking through and for our feelings, therefore all moral appeals, in so far as they are effective, become a hindrance to the maturing of our intellectual methods. From this point of view, we consider that all real individual and social progress can come only through means which must include the following: 1. Minimizing the influence of moral sentimentalism; 2, outgrowing the moralistic conflict of impulse, which is determined by unconscious factors, and appears as both a cause and an effect; 3, by the outgrowing of our emotional need for moral creeds, and other circumstances, by the means and toward the end of achieving mature intellectual methods, even as applied to problems of sex. What I mean by mature intellectual methods cannot be told within the limits of this essay.

When we have reached such psychologic maturity as I have in mind, we no longer regulate our sexual lives according to the conventional moral creeds of Mrs. Grundy, nor according to any code of the psychoneurotic sex reformer, not even the radical sex reformers. Now, with a considerable knowledge of Nature's psychoevolutionary processes and conditions, we live the whole of our lives so as to achieve an ever larger selfunderstanding, to the achievement of a growing poise and efficiency in social adjustments; all of which is again related to a maximum acceleration of the further maturing of our intellectual methods, in short of our psyche. Only so can we then hope to increase humanity's real comfort and satisfaction in life. In this process of maturing, the emotions which centre around sex are found to be a very important factor of control. If you now get any glimpse of what we are driving at, your opinion as to whether or not we overestimate sex becomes immaterial.

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Herpes Zoster with Unusual Prodromal Symptoms*

With Report of a Case

SAMUEL WEISS, M.D., F.A.C.P.

New York

Recently, (1) Blanton reported a case of herpes zoster simulating nephrolithiasis, occurring in a female, aged fifty-two, with history of pain over and below the tenth rib posteriorly. This attack simulated intercostal neuralgia and nephrolithiasis. Several days later a herpetic eruption occurred which cleared up the diagnosis.

Case.—Mrs. S. R., aged fifty-seven, menopause ten years previously, was first seen by me on September 17, 1925. There had been a sudden attack of pain and burning sensation on the left side from the midback radiating down to the groin; also complained of a burning sensation on voiding urine. Codeine and other sedatives were of little benefit in relieving symptoms. X rays taken previously were negative for kidney stones. There was present tenderness on palpation in the epigastric region and lower left quadrant. The blood pressure was 150 systolic, 99 diastolic. The urine was negative. Colonic irrigations were advised.

The patient was next seen on October 28, 1925. Colonic irrigation gave her some relief. Urine examination was negative.

The following day the patient felt worse. On November 30th, urine examination showed faint trace of albumin, many epithelial cells, few pus cells, occasional red blood cells, many urates and uric acid crystals.

The patient's diet was changed and medication given to overcome the kidney irritation which was

*Presented before the Society for Clinical Study, New York, on January 26, 1926.

FIG. 1.—Anterior view of patient S. R.

thought to be due to a gouty or uric acid diathesis. Little improvement was shown.

Urine examination on December 4th still showed a faint trace of albumin, many epithelial cells, few white blood cells; red blood cells and urates; no uric acid crystals seen.

Two days later the patient complained of an itching sensation on the abdomen and noticed several small blisters. The next day these blisters increased in size and also a number of them appeared on her back. When seen on December 7th, the patient presented an eruption of herpes and itching, but otherwise the patient said she felt better. Urine examination showed a faint trace of albumin, many epithelial cells and a few white blood cells.

On December 13th, the eruption of herpes was more marked; condition was much improved, burning less, but itching about the same. Her radiating pain had completely disappeared. Urine examination at this time showed negative findings.

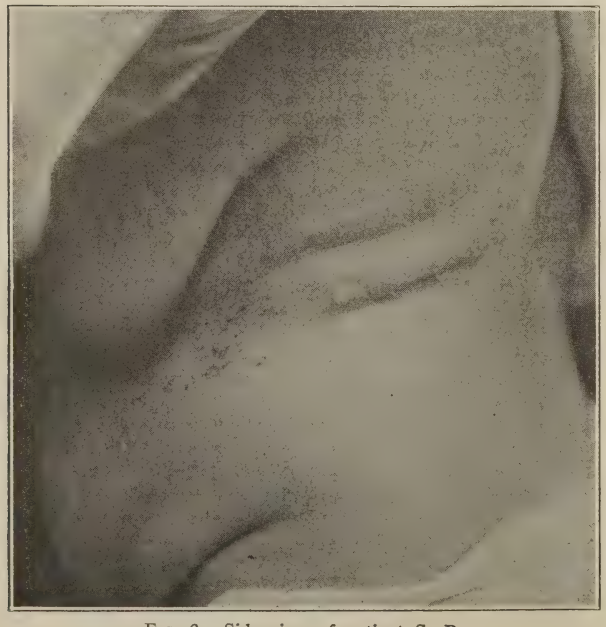

FIG. 2.—Side view of patient S. R.

SUMMARY

1. In this patient the pain and attack lasted for three months before the eruption of herpes occurred. When first seen the diagnosis was suggestive of intercostal neuralgia, nephrolithiasis or hypochondriasis.

2. Urinary findings were suggestive of kidney disease.

3. The eruption of herpes with the unusual prodromal symptoms, plus the urinary findings, makes one think of a gouty or uric acid diathesis as evidenced by the clearing of the urine under proper diet, medication and the relief of symptoms on the eruption of the herpes.

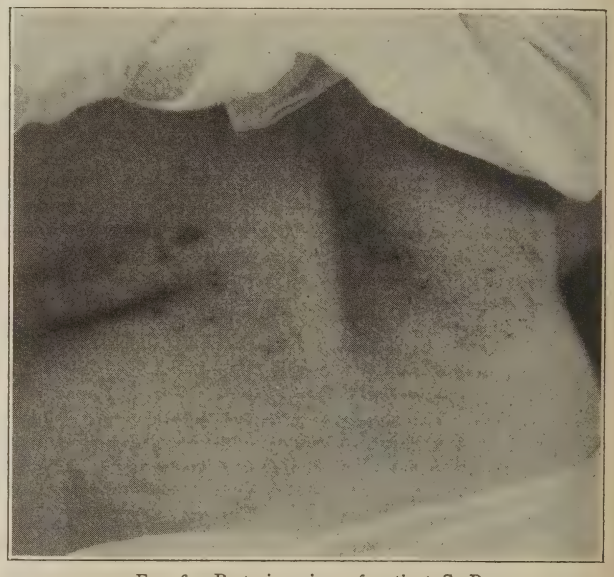

FIG. 3.—Posterior view of patient S. R.

Note: Since submitting this article the author has had two other patients with the same prodromal symptoms and relief after eruption of the herpes.

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35 EAST 66TH STREET.

Action of Light on Codliver Oil.—P. R. Peacock (*Lancet*, August 14, 1926) states that exposure of normal cod-liver oil to any source of white light of sufficient intensity results in the following changes: 1, The normal bright golden fluorescence of the oil progressively disappears, this effect being termed "delumination." 2, Before full "delumination" occurs the oil fails to give the arsenic chlorid test for vitamin A. 3, Fully "deluminated" oil, when kept for some months in the dark, slowly regains much of its fluorescence, but the vitamin A appears to be permanently destroyed. 4. There is a change in the absorption spectrum corresponding with the change in the fluorescence of the oil. As "delumination" proceeds, so the transmission spectrum extends into the ultraviolet region; as fluorescence returns there is a proportionate return of the absorption spectrum.

Heart Disease*

JOHN WILLIAM SHUMAN, M.D., F.A.C.P.
Los Angeles

Heart disease is a prominent cause of disability and death. It is frequently overlooked, and also diagnosed when not present. Many patients think they have heart disease if they have a pain in the chest, and many physicians think heart disease is present if a murmur is heard in the precordial region. The three principal diseases of the heart are, endocarditis, myocarditis and pericarditis.

Endocarditis is always infectious in origin; most often streptococcic; and too frequently results in valvular disease of the heart—the mitral and aortic valves usually the ones affected. The reason it often passes early recognition is that it is not suspected. A typical example is that of a doctor's three year old daughter who was just recovering from bronchopneumonia and was running an unexplainable fever and fast pulse. Consultation brought out the diagnosis of endocarditis, much because all other findings were negative. Cardiac sounds were not instructive. The patient died and autopsy found "infective proliferative endocarditis."

The first opportunity you get to listen to the heart of a dying person, do so, then examine that heart after death and see if your ear told you correctly. Heart clinicians who have the habit of checking up their findings after death have had remarkable lessons and found out often they were wrong.

One reason we are so anxious to clear up all foci of infection, such as the teeth, tonsils, gallbladder, and other locations, is that there will be less likelihood of a lethal pathology, e. g., endocarditis, developing early in life. Many patients recover with valvular insufficiency and the myocardium compensates, and results in hypertrophy of the heart. Later myocarditis (which pathologically may be of several types)—results in dilatation (heart failure). If compensation takes place the patient recovers for a period of more or less duration, depending on many things.

There are four causes for socalled enlarged heart, First, focal infection (socalled rheumatism), the valvular disease of the heart just described, in which instance the transverse diameter is increased—the P.M.I. to the midclavicular line or outside it.

Second, hypertension, usually giving rise to the "hypertensive-cardio-renal-vascular-disease syndrome." Heart disease always causes renalopathy, and *vice versa*. So that in many instances of fully developed terminal anasarca both heart and kidneys are so diseased that we cannot decide which was primary and which secondary—something like the "hen and egg conundrum."

Excessive wear and tear does affect the heart. The best example is the degenerative myocarditis seen secondary to toxic adenomatous goitre. Be on the outlook for toxic thyroid disturbances early. Paroxysmal tachycardia should lead one to suspect it.

Third, syphilis, which usually shows manifestations in and about the semilunar valves, with aortitis, aneurysm, and other conditions.

Fourth, pericardial effusion, which may be serous (excess of the normal fifty c.c.), serofibrinous, seropurulent, fibrinous or purulent, or other forms.

Paracentesis of the pericardium is not a dangerous procedure if done when necessary and carefully.

Percussion is a method with which one can fool himself easily. Always use the fluoroscope or an x ray plate or both to check up the size, position, and shape of the heart and great vessels.

Functional cardiac rate disturbances are the different arrhythmias. The one best understood is auricular fibrillation, in which the auricular ventricular bundle of His does not impart the impulse correctly as to time, causing disorderly action of the heart (D. A. H.). Patients frequently come to the doctor mentally disturbed by the fact that their "heart misses a beat." Do not be alarmed at this or make a greater hypochondriac out of the patient by telling him, "it means death!" Examine carefully, observe diligently, clear up as much real and imaginary pathology as you can without making the patient worse and you will help.

Cardiac failure may be early or late. The late with generalized edema, prostration, albuminuria, and other conditions is so easy to recognize that we need not discuss except a word as to treatment—which is rest and elimination. It is the early that is seldom recognized. Its two chief signs are shortness of breath and pain. Shortness of breath is complained of upon exertion—perhaps in hurrying for a streetcar, or may be at the height of digestion following breakfast. It may be during or following a fit of anger. Pain may be from slight to severe, may be in the precordium, the left shoulder or down the left arm, in left neck and head, or in the left upper back around the scapula.

These two subjective symptoms call for our keenest interpretation. A thorough, painstaking, physical examination will find other things to warrant the diagnosis of heart disease (myocarditis). The individual is one who has or has had focal infection, led recently a sedentary life, (overeating, underexercising) and is now paying the price.

A test of the myocardium as to fitness may be done by taking the pulse rate, then having the patient jump up and down twenty-five times, lie down, and count the pulse every minute. If the rate does not in five minutes equal that prior to the exercise myocardial weakness is marked. Treatment: rest in bed, digitalis, quinine, morphine.

The cycle of mitral insufficiency goes something like this:

1. Hypertrophy of left ventricle and dilatation of the left auricle with
2. Passive congestion of lungs.
3. Hypertrophy of right ventricle
4. Dilatation of right auricle
5. Tricuspid insufficiency resulting in,
6. Passive congestion of the liver resulting in the scarring of the liver which may be nutmeglike, brown atrophy, and other conditions causing ascites.

2007 Wilshire Boulevard.

*Clinic No. 3 at Los Angeles General Hospital for Seniors, College of Medical Evangelists, April 1, 1926.

Practical Therapeutics

The Treatment of Narcotic Addiction by Narcosan

ALEXANDER LAMBERT, M.D.
and FREDERICK TILNEY, M.D.
New York

In the summer of 1926 Commissioner of Corrections of New York city, F. A. Wallis, invited a group of physicians to visit the penal institution on Riker's Island, and pass judgment on a treatment for narcotic addiction which had been brought to his attention, and which had been tried on a small group of men. This group of addicts were in excellent physical condition, and in appearance showed no evidences of their previous narcotic addiction. They claimed they had slept during their treatment without other drug, and that they enjoyed their physical work afterward.

In spite of the evident crowd psychology, it was clear that a treatment which left the patients in such excellent condition was worthy of further investigation.

Later in October, at the request of Commissioner Wallis, a meeting was held to discuss the treatment, and the possibility of a further trial of its value.

The treatment advocated was the use of narcosan, a substance made by A. S. Horovitz, a biochemist, not a physician. This substance had been used successfully for narcotic addiction, and had been the subject of considerable controversy, but with no comprehensive test under proper conditions to settle its value. A strong and valid argument against it at this time was that it was an unknown substance, and under the objections to secret remedies could not be used.

It was suggested to Mr. Horovitz that he patent narcosan, through which act its composition would become known. Mr. Horovitz assented, and immediately patents were applied for at Washington. This places narcosan on the same basis as thyroxin, the active principle of the thyroid gland as patented by Kendall of the Mayo Clinic, or of salvarsan, an arsenical preparation patented by the chemist, Ehrlich, neither of these chemists being physicians.

The patent papers show that narcosan is a solution of lipoids, together with nonspecific proteins, and water soluble vitamines.

The lipoids are obtained from soy beans and cotton seeds, by extraction with hot alcohol; the vitamines from plant seeds by percolation with saline solutions; the nonspecific proteins from alfalfa seeds, or Hungarian millet, by extraction with highly diluted hydrochloric acid. Equal parts of these three solutions are mixed together to form narcosan. The proteids extracted by acid are used instead of those obtained by alkalies, as the acid proteins are nontoxic, while some of the alkaline proteins are highly toxic. The hot alcohol extracts both fats and lipoids, the fats being separated from the lipoids by a process of saponification.

The lipoids in narcosan have the chemical affinities and reactions similar to those of sphingomyelin, and as for sphingomyelin, the formula cannot be exactly given. Levene and Rolf (1) in their review of the phosphorus containing lipoids, state that but three of these are known, lecithin, cephalin and sphingomyelin. Many other lipoids, when originally separated, were supposed to be new individual substances, but have been shown to be fractions or combinations of the three just named.

Sphingomyelin yields by hydrolysis phosphoric acid, two bases, choline and sphingosine, and two fatty acids, but while the composition of it seems to be agreed upon, the allocation of its atoms in forming its constitution is still under discussion (2), and until it can be made synthetically, its exact structure cannot be definitely stated.

The exact formula, therefore, of the lipoids in narcosan cannot at this time be more definitely stated.

It has been independently proved by several chemists that narcosan does not contain morphine, heroine, codeine, nor chloral hydrate, nor does it contain any alkaloid, nor habit forming drug.

The theory on which narcosan was compounded was that of Myer and Overton regarding anesthetics that the "Narcotizing substance enters into a loose physiochemical combination with the vitally important lipoids of the cell." (3)

The theory of the action of narcosan in the body is that narcotics, such as morphine, call forth in the body certain protective substances to neutralize them. If the narcotics be suddenly withdrawn, and not given, these neutralizing substances are themselves toxic to the body. The lipoids in narcosan neutralize these toxic substances in place of the narcotic.

After seventy-two hours, because the withdrawal symptoms are over, these neutralizing reactions have ceased, the lipoids are then continued to replace the depleted lipoids in the body. The nonspecific proteins of the narcosan solution are added to stimulate the blood forming tissues. This is a theory which scientific investigations must prove or disprove.

In this regard it is interesting to note that the work of van Leeuwen (2) confirms the idea that the lipoids exert a definite influence on the action of alkaloids in the body. He has shown that cephalin augments the action of pilocarpine, while lecithin inhibits this action of cephalin on the pilocarpine.

He has also proved that the serum of men and animals inhibits the action of cocaine, without destroying the cocaine, and has further shown that lecithin possesses the same inhibiting effect on the cocaine. In an interesting discussion (3), he holds that this effect is produced by a physical combination in the adsorption of the drug, and is not due, as many others believe, entirely to the destruction of the drug by the liver. Other workers have found that animal tissues render inert other alkaloids such as digitaline and strychnine.

But the work of Greenfield and Pellini shows that up to the present time, though sedulously sought for by many investigators, these neutralizing or protective substances to morphine have not been proven to exist in the blood of human beings or animals tolerant to morphine. Nor was any toxic substance found present in the blood as a result of morphine habituation. The validity of a theory, however, of how narcosan acts is a question aside from its value and effectiveness as a remedy for narcotic addiction.

Commissioner Wallis was extremely anxious to find some form of treatment which would replace the socalled "cold turkey" method, or ordinary withdrawal method practised in the penal institutions in New York. He was anxious to try narcosan as an effective and useful treatment to help solve part of the narcotic problem with which the penal institutions in large cities in this country are faced.

A special ward was set aside in the Correction Hospital on Welfare Island for men, and quarters at the other end of the building for women, under Supervising Warden H. O. Schleth. The treatment was begun on March 30, 1926.

Some 219 men and 147 women have been given this treatment. It has shown itself to be of unquestioned value, producing a successful withdrawal of the drug in a few days, in some instances with but little discomfort, and in all instances with less suffering than the ordinary withdrawal method. The patients sleep without hypnotics of any kind during and after their treatment, and at the end of a few days are hungry, and digest easily all that their renewed and voracious appetites cause them to take.

The treatment is easily carried out with much less detail than with the belladonna treatment, and with no delirium as in the hyoscine treatment, and leaves the patient free from depression, and, as must be emphasized, with a returned ability to sleep.

The type of patients were those found in the penal institutions of a large city, the petty offenders for small crimes, who were addicted to the use of heroine and morphine, or those selfcommitted who have been sent by the courts to rid themselves of their addiction. In a few of these patients the addiction has been of short duration, in many of several years, ten or fifteen years' duration, others had been even thirty or forty years steadily addicted to some narcotic. It was strikingly noticeable that many of these patients began by smoking opium. They then took to opium by mouth, or morphine by hypodermic, and then turned to heroine, because of the difficulty of obtaining morphine at present. Sixty-three per cent. of the men, and eighty-four per cent. of the women were using heroine, sixteen per cent. of the men and twelve per cent. of the women used morphine, seventeen or eighteen per cent. of the men were using cocaine with their heroine, only one man combined cocaine with morphine; of the women, only two used cocaine, one with heroine, and the other with morphine. Heroine and morphine combined were used by twelve per cent. of the men, and by two of the women.

As in all prison statistics, only a small percentage of these patients gave sickness, or pain, as the reason for their starting the addiction. The majority drifted into it through the temptations of their environment. Many who were taking heroine volunteered the information it was the most easily obtained narcotic, and that in other parts of the country they would take morphine instead of heroine, as that was there the more readily obtained of the two.

All these patients previous to admission to the narcotic ward had had their baths, their thorough investigation as to whether or not they were concealing any narcotic on themselves. On admission to the ward they were given a capsule composed of:

Hydragyri chloridi mitis	gr.i	gm. 0.06
Ext. Colocynthidis	gr.iii	gm. 0.18
Ext. Euonymin	gr.s	gm. 0.06
Resinae Podophylli	gr.ss	gm. 0.03
Capsici	gr.ss	gm. 0.03
Pulv. zingib. } aa Strychninae sulph. } aa	gr.1/60	gm. 0.001

This was followed three or four hours later by a dose of epsom salts; as soon as their bowels acted they were given one c. c. of narcosan hypodermically. This was given intramuscularly, in the muscles of the upper arm, or in the shoulder at the back of the arm. These narcosan hypodermics are given thus every four hours for the first twenty-four hours, then every six hours for three days and nights, and then every twelve hours for three days and then once a day for about ten days, or until the patient has had about forty injections. No injections of morphine or heroine must be given. If these narcotics are given intense distress, nausea and vomiting, headache, and a sense of benumbing collapse is produced. In fact, the administration of morphine or heroine can produce a serious collapse. If the patients succeed in smuggling in narcotics and take them, these symptoms soon are evident. The narcosan treatment is selfprotective against the patient indulging on the sly in narcotics. If patients are nervously collapsed from the sudden withdrawal of their narcotic before treatment begins, they should be given narcosan immediately to quiet them, especially the women, who are more likely to become wildly hysterical under these circumstances. This quiets them and then they should have their cathartics.

For the first twelve hours the patient becomes nervous and restless, he feels weak, and is likely to be troubled with twitching of his muscles, pain in the back, and headache, and often pain in the legs. As the narcosan is given to him he becomes less nervous, and if the patient is excessively nervous an extra dose of narcosan can be given him at the two hour interval. The majority of the patients do not sleep much the first night, not a few, however, do get short naps, or among some of the heroine takers, they obtain quite a little sleep. Some patients go through the entire treatment with hardly any uncomfortable symptoms.

In the next twelve hours the twitching and the nervousness continue, and patients are apt to have nausea and vomiting, and some have abdominal cramps and diarrhea. Some of these patients will have simply the nausea and vomiting, others will have only the diarrhea. When their diarrhea becomes excessive there is a diminution in the amount of urine passed. If the diarrhea is not excessive they begin frequently to show a diuretic effect, and pass an increased amount of urine. Many of them feel cold and are with difficulty kept warm, others sweat abundantly.

On the second and third night they begin to sleep

at short intervals, or obtain two to four hours sleep. After the second night the majority of patients say that they feel much better.

Often when vomiting other substances, these patients can retain fruit juices, such as of lemons and oranges, and it relieves the dryness of their mouths, and makes them more comfortable.

Among those who show a severe reaction are especially those with morphine addiction of long standing, these patients are likely to have severe abdominal cramps, their pulse becomes frequent, and even feeble.

In other patients the pulse becomes infrequent, dropping down below 50, but these do not have as much discomfort as those with rapid pulses. Those with slow pulses, however, do not seem to have as quick a reaction towards convalescence and recovery as those with frequent pulse rates. By the third night the patients are beginning to sleep better, and the symptoms are abating even in those who seemed previously severely ill.

They soon improve, and in the great majority of instances on the fourth day become comfortable. They acknowledge their physical craving for narcotics has ceased. By the fifth day their appetite begins to return, and they sleep more both in the daytime, and at night, and soon their appetites become excessive, and they are hungry, and continuously eager for food, especially sugar. The older patients, and those long addicted to morphine, convalesce more slowly, and complain of weakness although they sleep and have no pain nor narcotic longing.

During the treatment, if the patients are very nervous and uncomfortable, hypodermics of one sixtieth of a grain of strychnine, or even one thirtieth, can be given every four hours, or even every two hours as the patient's need seems to demand. If every three hours the patients are given thirty grains of bicarbonate of soda dissolved in water, and made to drink it, their vomiting, and their diarrhea is much less, their abdominal cramps are markedly diminished, and they do not go on into the simulation of collapse that a few of them will do if the bicarbonate of soda is omitted.

We have tried many remedies to relieve their headaches, and other pains, and remedies to relieve their nausea and vomiting; aspirin and phenacetin and the other coal tar products do not seem to give satisfactory results, and the patients were better without them than when they are given.

The one drug that seems to relieve their nervous restlessness is the strychnine, and if the bicarbonate of soda is pushed, their discomfort during the treatment remains at a minimum.

Fear is a great element in these patients coming off of their narcotics, and the women are specially prone to become hysterical through fear. Another emotion is that of anger because no narcotics can be given. They emotionally cling tenaciously to their narcotic, and resent the deprivation. Many selfcommitted patients have committed themselves to reduce the necessary amount of their drug to be taken after they go out in order to obtain a renewal of their former pleasure in beginning their addiction over again. These resent bitterly the obliteration of their narcotic craving by the third or fourth day. If these emotions are quieted, and bicarbonate of soda is pushed regularly, their symptoms are much diminished.

Patients are not delirious as in the hyoscine treatment, thrashing around in a low delirium; they are not ugly and obstreperous, as in the slow reduction treatment; they are tractable, subdued and quiet, and soon appreciate that the hypodermics of narcosan relieve their symptoms, and they ask for an extra hypodermic from time to time.

These hypodermics do sting, and give a burning sensation, but when given straight into the muscle, and the place is rubbed previously, and the skin stretched, and not picked up and pinched between the fingers, and the place of injection rubbed thoroughly after it is given, this stinging and burning is much diminished in its severity, and in many persons ceases altogether. Before the giving of each hypodermic it is necessary to boil carefully the syringe and the needle, and when this is done there are no infections; if it is not done abscesses may occur. The needles boiled in dilute soda solution just previous to the injections, and kept in mineral oil, keep in excellent condition, and give no trouble. Old abscesses were frequently found in these patients, but when opened and dressed, they healed with more than usual rapidity.

In the early period of giving narcosan, the severity of the abdominal cramps in a few patients, the intensity of the nausea and vomiting and the simulation of collapse as similar to an abdominal perforation, but with Kussmal type of breathing, gave the picture of an acute acidosis poisoning. It was on this evidence that the bicarbonate of soda was used and pushed so vigorously, with such excellent results. One patient, a negress, thirty-six years old, who in two previous reduction treatments had had convulsions and serious collapse, nearly ending fatally, had intense pain due to intestinal spasm, with small frequent pulse and cold extremities, with unexplained dyspnea and collapse. In spite of vigorous stimulation, the patient died forty-eight hours after beginning treatment; this was the only fatality.

To ascertain if variations in metabolism occurred in the body during the treatment, before beginning the narcosan in nine patients the blood was taken on admission, and tested for urea nitrogen, uric acid, creatinin, and sugar, and the amount of carbon dioxide combined with the plasma. This was done during the five consecutive days of the treatment, during which the patients showed symptoms. The red cells and the hemoglobin, white cell count and differential counts were made simultaneously, and a twenty-four hour specimen of urine was gathered and analyzed.

In another group these same examinations were made for five days, beginning twenty-four hours after the narcosan was first given; in another group the examinations began forty-eight hours, and in still another group ninety-six hours after beginning of the narcosan, and continued for five days, as they were convalescing. This gave an idea of their blood chemistry during their withdrawal symptoms, and for the first nine days of their treatment, and of the leucocytosis and the differential count, and the changes occurring in the urine. These examinations of blood chemistry, urine and the blood counts were done by the laboratory of Dr. Frederick Sondern.

A month after the completion of the treatment,

after they were out of the ward, the blood sugar and the carbon dioxide content were taken again, in a group of nine former patients, to see if it had dropped back to normal.

These examinations in detail show as follows: the blood chemistry shows an uninfluenced normal of the uric acid and creatinin. The urea nitrogen averaged 20.2 mg. per 100 c. c. for those examined on admission before narcosan had been given and 18.7 for those examined in the first eight days of the treatment. It averaged 19.9 mg. for those examined in the first five days, but averaged 17.3 mg. in those examined from the fourth to the ninth day. The sugar content of the blood was high, averaging for those examined on admission before beginning treatment 123.3 mg. varying from 106.5 to 150 mg., and for those examined during the first nine days of treatment 147.5 mg. In the case of those examined during the first five days of treatment, the blood sugar averaged 134.8 mg., and in those examined from the second to the seventh day the sugar averaged 155 mg. This rise is due in some measure to the increased consumption of sugar on the sixth and seventh days, since after the fifth day of treatment these patients have an excessive craving for sugar. This desire for sweets lasted throughout their treatment. In two patients examined after ten days of treatment, the blood sugar averaged 168.6 mg., due doubtless to the amounts of sugar consumed. The blood for these tests were taken at 8:30 a. m. an hour after their breakfast, and the sugar content was probably influenced.

In nine patients examined during the first nine days the blood sugar averaged 133.4 mg. One month after all treatment had ceased the blood sugar of these same nine patients, taken at the same time one hour after breakfast, had dropped down to normal, and averaged 114.6 mg., varying from 90 to 135 mg. It is striking that only in one patient on one day when his blood sugar registered 150 mg. did any sugar appear in the urine. These twenty-seven patients examined varied in blood sugar content from 105 mg. to 210 mg. In sixteen of the 121 sugar examinations the blood sugar was above 180 mg., which is given as the usual threshold in normal persons beyond which glycosuria appears (1). Yet glycosuria did not occur in any of these patients. It would seem as if the narcotic inhibited the use of the sugar, rather than increased its presence in the blood, and when free from the narcotic, excessive intake of sugar, produces a high blood sugar, and a rapid consumption by the tissues occurs without sugar loss through the kidneys.

The carbon dioxide chemically bound by the plasma averages 57.8 c. c. for those examined in the first nine days of treatment. Many of these patients showed a low carbon dioxide of 46-48 or 50 c. c., averaging 53.2 c. c. in the eight patients examined on admission. On the following day after receiving narcosan, they showed 58-68-58 c. c. Others showed an increasing acidosis for the first three days of treatment, and then a sudden improvement. With the low carbon dioxide in some instances there appeared in the urine traces of acetone and diacetic acid for twenty-four to forty-eight hours. In nine patients whose carbon dioxide content averaged 55 c. c. during the treatment, varying from 38 c. c. to 76 c. c., one month later, after all treatment had ceased, the carbon dioxide content averaged the normal 70 c. c., varying from 64 to 76 c. c. The variation in the carbon dioxide blood content did not follow any definite relationship with either the increase or diminution of the urea nitrogen or sugar content in the blood.

These narcotic patients were not excessively anemic, although the hemoglobin was not higher than 80, it was not lower than 70 in any of those examined. The lowest red cell count was 4,300,000, and the highest 4,890,000. During the treatment there was a slight leucocytosis of polymorphonuclear leucocytes. The leucocyte count varied from 6,800 to 16,200 and the percentage of polymorphonuclear cells varied from 60 per cent. to 83 per cent. usually being about 70 per cent. When leucocytosis was present the leucocytosis was not present until after the administration of narcosan.

The twenty-four hour specimens of urine were small in amounts with high specific gravity, being concentrated from excessive diarrhea. In some patients the urine was negative throughout the treatment. Usually there was a slight trace, or trace of albumin, a slight excess of indican, a few pus cells, occasionally a few hyalin casts. In a few instances there were a few red blood cells for one or two days, and then these ceased to appear. Often there was an excess of oxalate of calcium crystals. As has already been stated, rarely a trace of diacetic acid, and not infrequently a trace of acetone, but sugar was present in only one specimen of one patient, whose blood sugar on that day was 150. No bile pigments appeared in any specimen of urine examined.

The previous venereal history of these patients was entirely unknown, but the frequency of a few pus cells noted in the urine may not have been due to narcosan.

The convalescence of the patients under a daily injection of narcosan is interesting to any one accustomed to narcotic addicts under treatment for their addiction. The narcosan patients have a voracious appetite, are always hungry, especially for sugar, and unlike after other treatments can digest all they eat on the fifth or sixth days of this treatment without any digesive disturbances, and without any recurrence of their withdrawal symptoms. The natural habit of sleep returns to them sooner than after any other treatment. They rapidly improve in color, and rapidly put on weight on the regular prison fare. They acknowledge that they "don't think of the dope." Not infrequently patients sweat at nights, a few excessively, which ceases immediately on the cessation of narcosan. A few showed a blotchy, urticarial rash, appearing fifteen or twenty minutes after narcosan injection, and disappearing in about two hours; a few showed a fine proteid rash which soon disappeared. Three patients showed an internal strabismus, which disappeared entirely before they left the ward. These patients crave in convalescence fresh air and sunshine and are eager for muscular action and work. They do not hesitate to mount on ladders or scaffolds, they are sure of their equilibrium, a normal condition, which those taken off narcotics by the reduction treatment rarely possess.

How many of these 366 patients will relapse and return to the narcotic and again appear in the Work House is absolutely unknown, and incalculable; it can not be estimated for at least eighteen months.

Thus far, over six months, only one patient, a negress, has come back to the Work House. This patient stated that she had no desire for her drug, but it was a perfectly good method of obtaining pleasurable sensations, and she did not intend to give it up. The question of relapse to narcotic addiction is a question of companionship and social environment, with their group customs and herd suggestions acting on psychologically distorted personalities. It is a social question to be dealt with after discharge. The question here investigated is purely a medical decision of the value of narcosan as a treatment for narcotic addiction. Narcosan is equally efficacious in the treatment of other narcotics, as alcohol and veronal. These last drugs do not have the withdrawal symptoms of the opium narcotics. The patients rapidly clear up mentally, and sleep during their treatment, and after twelve to twenty-four hours cease to demand their narcotics. They convalesce rapidly.

Skilled nursing is a necessity in carrying out any treatment for narcotics. We wish to make public acknowledgment to the nurses who so skilfully and successfully aided in this treatment.

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Morphine.—M. A. Slocum (*American Journal of Surgery,* 40:4) advocates the preoperative and postoperative use of morphine, the former to prevent or lessen shock, the latter to prevent or relieve pain. Although it is generally accepted as an aid in preoperative use, its postoperative use is still a matter of controversy among many. The author finds that postoperative complications are little influenced by the administration of morphine since they occur many times in patients who have been denied morphine. Moreover, the drug in itself does not act as a cause of complications.

There would seem to be a great deal of evidence that morphine will prevent postoperative shock, if given in small doses and at proper intervals after operation. While part of the credit for the diminishing incidence of this tragic condition must be given to expert anesthesia and careful operative technic, no small part of it belongs to the morphine.

It is an accepted physiological fact that morphine is the best circulatory sedative that is known. It is then, a reasonable deduction that the drug will lessen the likelihood of postoperative hemorrhage, a condition that is seldom seen nowadays.

The statement is often made that because morphine lessens peristalsis its use is contraindicated after abdominal operations. To this rather dogmatic opinion I cannot subscribe. Since both anatomical and physiological rest are greatly to be desired in these cases, then a splinting of the bowel would appear to be a benefit to the patient rather than a menace. It is for just this reason that morphine has been found to be the drug *par excellence* in the treatment of peritonitis. Furthermore, since this latter condition is the most feared of all postoperative abdominal complications it follows that morphine, through its splinting action on the bowel, has much to do in preventing the spread of any infection that may be present.

Nonspecific Protein Injections in Chronic Arthritis.—W. Yeoman (*Lancet,* June 26, 1926) submits an analysis of fifty cases treated with a specially prepared typhoid paratyphoid vaccine made up in the proportions of two parts of Bacillus typhosus to one part of Bacillus paratyphosus A and B.

The summarized findings are as follows: 1. In the intravenous injection of vaccine we have a therapeutic agent which is capable of producing improvement in a short space of time in between eighty and ninety per cent. of all types of arthritis, and this improvement is maintained in between fifty and sixty per cent. of the cases. 2. The types which respond best are the acute and subacute where the disease is confined to the periarticular tissues—in these cases permanent benefit is assured in over ninety per cent. of the cases. Where the joints themselves are affected definite improvement occurs with arrest of the disease, but naturally bony changes cannot be altered. 3. If all possible foci of infection have not been removed the injections do not arrest the disease and the patient will relapse. 4. Though the reactions are severe the contraindications are few—disease of the myocardium, gross kidney disease, chronic alcoholism, tuberculosis and syphilis being the chief. 5. The most desirable reaction is that in which there is a rigor, sharp rise of temperature, quick fall, and profuse perspiration, and doses should be regulated to produce this. 6. In view of the proved ability of these injections to cut short an attack of rheumatic fever, the author pleads for an extended trial of this treatment in the hope that much invalidism from heart disease might be prevented. 7. The patients who do not do well are those in the menopause group of the chronic villous type, and those showing achylia.

Treatment of Beginning Mastitis with Local Autohemotherapy.—V. Rubeska (*Zentralblatt für Gynäkologie,* January 30, 1926) formulates the following specifications for autohemotherapy in beginning mastitis:

The injection of the patient's own blood should be made as soon as possible (within twenty-four to thirty-six hours) after the appearance of the first symptoms. The dose with the nonlocal application must be at least forty, but better sixty c. c. If the temperature does not fall to normal on the following day, the injection should be repeated, in that case possibly locally around the inflammatory focus. Otherwise good results are obtained with injections in the thigh, the technic of which is simpler for the physician and more pleasant for the patient. But it must not be forgotten that with the local injection of the blood a greater local concentration of the antibodies is obtained, so that a larger dose must be given when the injection is made into the thigh.

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The Static Current in the Treatment of Inflammation*

WILLIAM BENHAM SNOW, M.D.

New York

The consideration of inflammation has been a classical topic in all ages of medicine. Now, as never before, the classification of types is more distinctive and the methods of treatment more successful with the progressive development of the science. There are two distinctive groups of inflammatory conditions, those designated by Adami as simple, in other words, those in which there is no infection, and those associated with a process of infection. There might be a third class added, namely, those arising from disturbed metabolism, and the inflammatory conditions arising from infection might be divided into two classes, namely, those in which the infection is located at the site of trouble and those in which the local condition is toxic, caused by an infection elsewhere.

INFLAMMATION DEFINED

Inflammation has been variously defined. Adami (1) quoting Grawitz (2) states that "inflammation, he holds, is the reaction of irritated and damaged tissues which still retain vitality. This definition has this great advantage, that, stating the cause, it clearly recognizes inflammation as a process and not as a state. The manifestations of this process under favorable conditions—where the region injured is a loose and vascular tissue, and where the injury is sufficiently severe or extensive—are redness, swelling, heat and pain; redness from the congestion of the vessels; swelling from the exudation of fluid and corpuscles from the congested vessels; heat from the increased amount of blood in the region, and pain from the irritation of the terminations of the nerves in the region. To these four signs may be added a fifth, disturbance of function, brought about by this departure from the normal condition of the region."

Adami (3) further states that "the increased temperature of superficial areas when inflamed is due, not to the production of heat in the part, but to the increased quantity of blood passing through it. When the congestion is so great that stasis ensues, there may be actual decrease in the temperature of the part."

Adami (4) also states "that the exudate varies in amount and in character with, a, the nature and intensity of the irritant; b, the condition of the organism, and c, the region of irritation. That while it undoubtedly augments the nutrition of the affected region, increased nutrition at the early stage of an acute inflammatory process would not seem to be of benefit or to play any important part. At a later stage and in chronic inflammation the increased nutrition possibly aids the hyperplasia."

PATHOLOGY

It will be seen here that the ultimate condition recognized by this eminent authority is hyperplasia. In other words, when stasis exists for a time hyperplasia is certain to intervene. It is, therefore, recognized as a fact not to be questioned that the effect of unresolved stasis is the establishment of hyperplasia. The importance of the resolution of stasis at the earliest possible moment is indicated in all cases of noninfected inflammation either as associated with the margins of lacerated tissue or in the tissues of a joint or other part resulting from a traumatic injury.

Exudations occurring in the synovial structures of joints following traumatic injuries of joints are particularly to be considered in this class, for the fluids which accumulate in these structures require prompt attention and removal in order to establish the reparative process as soon as possible after the injury or strain. Other inflammatory processes as occurring in organs or glands of the body, which are not the seat of inflammation, as of the liver, spleen, prostate gland and uterus, are likewise to be considered as inflammatory in character and requiring resolution or elimination of the exudations in those parts and elsewhere in joints and perineural sheaths arising from trauma or focal infection elsewhere.

The inflammatory processes of the various types referred to may be considered in practically one class as requires the removal of the infiltrating exudates and when caused by focal infection, coincidently curing the infection.

The treatment of these inflammatory conditions is a matter upon which various views have been advanced by authorities. Adami (5) in a short chapter devoted to treatment in his work on inflammation considers the subject as follows with reference to a "reaction in excess," which he states "is the excep-

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tion, not the rule. At most we note in acute cases that one factor in the process may be unduly exalted as compared with others, so that the vitality of the tissues is imperilled—excessive hyperemia may pass on to stasis and necrosis, there may be excessive deposit of fibrin, and so on—and means, where possible, must be taken to regulate the process. Another group of cases would seem undoubtedly to be the series of sympathetic or referred inflammations, in which parts, whether surrounding the injured area, as in the case of the joints, or at a distance, but innervated from the same region of the cord, show the symptoms of an acute inflammation when they themselves have undergone no direct irritation. A knee, or an ankle, for example, which has suffered a relatively slight mechanical injury of the joint surfaces or ligaments, may rapidly present intense swelling and redness of the surrounding parts. Such in the absence of any treatment tends to bring about immobilization and physiological rest, but where recognized it may safely, I think, be dispensed with, provided physiological rest may be gained by other means."

In this statement he implies, of course, the use of retaining splints as of plaster. This method was followed in the early part of the Great War in the treatment of all cases of arthritis, but ankylosis occurred so frequently that the surgeons were brought to realize that the worst thing to do for an inflamed joint was to put it in casts. Even the open cases were treated by the open method in order that the joints might be mobilized. This definitely determined a new doctrine for the treatment of acute traumatic injuries of joints.

Adami (6) states further that "it is in these cases of excessive hyperemia tending towards stasis (as suggested to me by my colleague, Dr. G. Armstrong) and of referred inflammation, that the reduction of the hyperemia by the application of cold would clearly seem to be the proper practice. In chronic inflammation it cannot be said that there is any direct treatment. If fibrosis has occurred we cannot directly cause its absorption. We have, it is true, evidence that fibroid tubercles and fibroid adhesions may eventually disappear; we cannot bring about this result with certainty in any particular case. At most we can endeavor to improve the circulation in general, and by that and other means improve the vitality of the tissues and favor the removal of the irritant, as also by the employment of drugs, such as potassium iodide, we can strive to promote absorption. Electricity, active and passive movements, and massage are all useful auxiliaries. Vesicants, rubifacients, setons, and counterirritation have all been employed toward the same end."

Contributions of the most recent writers on the subject of the treatment of arthritis go little further than the method advised by Adami. Pemberton (7) states that "of great importance also in the restoration toward normal is the intelligent use of baking, hydrotherapy, massage and exercise. Agents that favorably influence the metabolism, such as arsenic and radium, are of great value, and the influence of systematic rest of the whole body may be a *sine qua non* of succesful therapy."

It would seem, therefore, that, from the presentation of the observations based upon the methods employed as suggested by Adami and the more recent observations of Pemberton, they are matters of no small consideration if their point of view represents the present status of the treatment of these cases by the orthopedist.

In a paper read by me (8) before the American Electrotherapeutic Association at Buffalo in 1901, I first called attention to a demonstration which I had made during the previous year in the treatment of a young man's hand, sprained in the gymnasium, when, in falling, he had sustained his body weight upon the extended right hand and sprained the carpometacarpal articulations. The swelling and pain in the hand on manipulation were so great that he refused to permit handling, and could not close or use the hand. The x ray disclosed the fact that there had been no fracture, and with an application for one half hour of the static brush discharge applied over the back of the hand where the swelling was considerable, during the application it very nearly disappeared. That result disclosed the fact that what we accomplish with the static modalities is the early removal of exudations, before hyperplasia, occurring with local inflammation, when arising from trauma or other causes. The only exit for such infiltration once in the lymph spaces is by way of the channels of circulation. The successive contractions induced locally in the tissues and muscle cells forced the accumulated cells on through the outlets, and the local swelling disappeared. The same treatment on the following day gave complete relief. To one who had contended for days and weeks with sprains, this was a revelation.

This was the first presentation of the subject before a national body and was the result of a previous experience of three years in the New York Postgraduate Hospital Clinic in electrotherapeutics and nervous diseases of Dr. William James Morton, in which I was at that time instructor. In the discussion of this paper it was acknowledged by Dr. Morton that prior to this time the use of electricity in acute conditions had not been generally recognized. The consensus of opinion had been, and is today with the neurologists and many others, that electricity should never be employed in the treatment of acute inflammatory conditions. Since the presentation of this paper, the sentiment has grown steadily in favor of the early treatment of every traumatic inflammation as well as of infection by radiant energy and high frequency modalities in the infections and static modalities in the noninfected cases.

Attention was again called to the importance of this principle in my work on *Static Electricity and Uses of the X Ray* (9) and again in my work on *High Potential and High Frequency Currents* (10) and in numerous other contributions I have made on the treatment of inflammation. Since the introduction of this principle, large numbers of physicians have demonstrated without question the validity of the claims that the static modalities will remove early induration, so establishing circulation with restoration of function in processes which are the seat of local stasis.

It seems, therefore, that every effort should be made as these facts are confirmed to advance the establishment of methods which mean so much for the relief of pain and suffering of conditions that cannot be so satisfactorily relieved by other means. It is true that when the congestion is such that stasis is established the use of diathermy and radiant light

and heat will not restore circulation. When a hard indurated area is once established, it is quite impossible to effect a restoration of circulation by the employment of these measures but the tendency is rather to increase the local congestion by urging more blood into the already obstructed field. As set forth in my early exposition of this subject, the static modalities are practically the only electrical methods that will effect such resolution.

In a paper presented before the American Electrotherapeutic Association at the Chicago meeting (11) the following observations were made: The question has often arisen why we should not expect to obtain the same result by stimulating muscular contraction through stimulation of the neuromuscular mechanism at the motor points. Experiment, however, has disclosed the fact that such stimulation will not effect the removal of exudations. In the case reported the mildest of all the static methods was employed for inducing local tissue contraction for tissue drainage. The same or deeper effect is obtained with the static wave current, and in deeper tissues with the static sparks.

The uninterrupted static current from the influence machines is in every respect a directional current, as is the constant current—the galvanic—and, as such, delivers positive from one pole and negative from the other. It is a constant current of high voltage and small amperage, and, as such, produces, when interrupted, the same effect upon muscle cells as the low volt galvanic current plus the effect of high voltage. The experiments of Claude Bernard (12) long since demonstrated the independent contraction of muscle cells when separated from the living body by the passage of interrupted currents of galvanism to the cells. Howell (13) and all other authorities have shown the same effect of the constant current on muscle cell stimulation. With the low voltage current, however, it must be applied directly to the muscle cells and could not otherwise induce contraction beneath the resistant skin; whereas, the static current of high voltage overcomes the skin resistance, and so produces independent muscular contraction of the cell mass. This is proved because the tissues respond in an infinitely shorter time than the neuromuscular mechanism can be aroused by reflex stimulating through the motor points.

It is this independent contraction of the muscle cells which calls forth such responses when applied to infiltrated tissues that causes contraction of all cells so stimulated, and so expels the infiltration from inflamed tissues. Under observation, this may be demonstrated in all superficial cases and by the relief of pain and swelling in the more remote tissues to which the static wave current and the static sparks are applied. We can find no objection that will disprove the correctness of this point of view in the face of visual observation and subjective findings.

That other currents which produce contraction of the muscles do not effect a similar result, acting, as they do, through the neuromuscular mechanism, is due to their failure to induce independent cell contraction. These effects, therefore, cannot be accomplished with the currents of low voltage. Hence, the means of relief of a local infiltration must depend upon stimulation with the high potential constant current of very small amperage—the static current—which, acting as a local stimulus to the cells, effects the removal of infiltration wherever present in swollen tissues.

The only contraindication for such administration is its indiscriminate application over malignant tissues and to parts the seat of local infection.

The clinical results in the treatment of all manner of inflammatory conditions to which the static modalities are adapted is so remarkable that what is said of the effects is not credited by those who have not observed the results of static administrations.

There is no other effect which could explain the relief afforded the local conditions and symptoms of traumatic injuries but that given, and the indication in those cases is selfevident to all who are familiar with the subject.

A comparison with statements of authorities who employ other methods will illustrate marked contrasts with similar cases as reported.

PHYSIOLOGICAL EFFECTS OF STATIC MODALITIES

The three important physiological effects of the static modalities are as follows:

1. The effect described of removal of infiltration and exudation that engorges the tissues following an acute trauma or arising from toxic foci, including cases of rheumatism, rheumatoid arthritis and other toxic arthroses, in those of toxic origin, at the same time trouble at the focus must be removed.

2. There is no method or modality so effective in removing muscular tension always present with inflammatory conditions but never to be employed over areas infected locally or in malignant cases.

3. The effect on general metabolism derived from the active surging of the current to and fro through the body during the process of administration is remarkable.

These three effects are reasons why static electricity fills an unequaled rôle in the treatment of inflammation not associated with local infection and for the general effect upon metabolism.

The static machine and static methods have been the most neglected of physical modalities except by a few hundred well informed earnest physicians, who have learned to master the technic and employ the modalities scientifically.

As my early discoveries are largely responsible for the development of the static methods, it will be but proper to include further the numerous conditions in which these discoveries were first used with the indications and results.

CONDITIONS IN WHICH STATIC ELECTRICITY WAS FIRST USED

Neuritis.—In October, 1898, the first case of neuritis—a case of tic doloureaux—was treated by applying a metal electrode and employing the static wave current over the branches of the fifth nerve passing out through the different foramen. This severe case was of but three days' duration and was completely relieved with three treatments from a most distressing condition. Many recent cases have been promptly relieved by this and some of months' duration.

Sciatica.—In April, 1899, the first case of sciatica with the lesion at the notch was treated with the static wave current applied over the sacrosciatic notch. The

patient had not slept the two previous nights, but was completely relieved of pain and slept the first night following a twenty minute treatment over the notch with the static wave current, and was cured within ten days.

Ten similar acute cases treated in the same manner were reported at the New York meeting of the American Electrotherapeutic Association (14) in 1900, all of which had been cured with the wave current within ten days. These results were so phenomenal and unusual that they made a marked impression upon the writer at that time.

Bell's palsy and coccygodynia.—In the same communication were reported four cases of coccygodynia treated and cured by the same method, and also cases of Bell's palsy treated and cured with the static wave current. This is now with us the standard and uniformly successful method of treating Bell's palsy and tic doloureaux and all early cases of neuritis not of toxic origin, and the toxic cases also with removal of the cause.

Poliomyelitis.—The first static treatment of a case of anterior poliomyelitis (15) was given by the writer and reported in the same communication and another case was reported in full in 1903 (16). Subsequent to this, all early cases of poliomyelitis which have come under the writer's observation have been either completely restored or greatly relieved by the use of the static wave current applied at first daily and later on alternate days over the spinal cord, employing a narrow metal electrode with a spark gap of from eight to twelve inches. We now add the use of light to the spine in the treatment of these cases and exercise with the sinusoidal current in chronic cases. The use of reflected light was first established by use in the treatment of a case of a physician's daughter in Wilmington, Delaware, in 1913.

Arthritis and rheumatoid arthritis.—These conditions were first treated by the methods described, employing the static wave current and static sparks, and reported at the Washington meeting of the American Electrotherapeutic Association (17) in 1899. Since reporting these cases, upwards of forty cases have been successfully treated by the joint administration of the static modalities, radiant light and heat and mechanical vibration, with attention to diet and the alimentary conditions.

A report of two cases of Still's disease and cases of arthritis deformans successfully treated was made in 1904 (18).

Prostatitis.—The first reference to the treatment of prostatitis with the static wave current was made in 1900 (19) and in numerous contributions since that time. The relation of prostatitis to sexual neurasthenia and impotency was then considered and notably confirmed (20) in many subsequent papers and contributions. Many hundred cases treated by myself and others have confirmed the great value of this discovery which I consider one of the most important in the twenty-seven years that I have devoted to this interesting field of medical research. And now it may be stated without fear of contradiction that the surgery of prostatitis could be anticipated in many cases by the early employment of the static wave current.

Pelvic conditions.—The same is true of dysmenorrhea, uterine congestions, subinvolution and vaginismus (21) treated with the static wave current per rectum. These results have been reported variously by others.

The use of the static wave current in the treatment of these pelvic conditions in the male and female, if the static modalities were used for no other purpose, would afford sufficient grounds upon which to urge their general adoption by the profession at large, including the progressive gynecologist and genitourinary practitioner.

Visceral congestions.—In all visceral congestions not associated with the presence of local infection or malignancy, as of the liver with simple congestion or cirrhosis, the large malarial spleen, the pancreas in diabetes, the kidneys in nephritis, are found conditions upon which the author has often reported the successful use of the static current and as time passes without the introduction of better methods, he becomes the more insistent in urging the use of these modalities in all indicated conditions. Attention has been frequently called to the results in cases of large cirrhotic liver, when, if the use of alcohol is suspended, they may be reduced to the normal size; likewise, the large malarial spleen.

Exophthalmic goitre.—Exophthalmic goitre (22) was first treated with the static current by me in the clinic at the New York Postgraduate Hospital in 1899. Since that time we have treated, with marked results, upwards of twenty-five cases of this condition, employing jointly and systematically, the static wave current, x rays and mechanical vibration. Uncomplicated cases of hyperthyroidism can be relieved without exception, by any physician who is skilled in the use of the modalities mentioned. The static current plays the largest rôle in the successful treatment of hyperthyroidism.

Trauma.—In the treatment of all conditions of trauma and in all cases of noninfected inflammation and disturbed metabolism, as stated in the body of this paper, the static modalities play a rôle which no other means of any kind approaches in the results obtained. This readily demonstrated statement affords ample reason for their general adoption in therapeutics.

There have been such remarkable results in so many conditions with the static modalities in which other methods have failed that a more liberal recognition and adoption in the management of the cases referred to is earnestly sought by progressive men in the profession.

CONCLUSIONS

1. The peculiar effects of the static current are derived from the fact that it is a direct or constant current of high potential and therefore possesses the characteristic qualities of the constant current in inducing direct muscular contraction of the muscle cells.

2. The effects of the static current important in therapeutics are: a. The mechanical removal of infiltration from engorged tissues where no infection is present. b. It produces a complete relief of tense muscles when applied, thereby overcoming muscular contraction associated with the inflammatory processes. c. With the general administration of the one pole modality, it has a remarkable effect in improving local and general metabolism.

3. There is no other electrical current at present available possessing the same characteristics and capable of the same therapeutic effects as the static modalities, and, from the fact that it is so remarkable in its influence upon inflammatory conditions, it is indispensable for prompt and complete relief of those conditions.

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1650 Broadway.

Hydrotherapy in Mental Diseases*

ARTHUR H. RING, M.D.

Boston, Mass.

PREAMBLE

The use of water is not a fad in the treatment of disease. It has a long and honorable history—too long to discuss in a practical paper. Suffice it to say, that from the time of Æsculapius, about 4000 B.C., to the present time, whenever and wherever the healing art has been practised with enlightenment, water has played its part. Of all therapeutic agents, water is the most flexible in point of temperature variation, the most easily obtainable and the cheapest. If we could have but one remedy with which to treat the sick, water would be the agent of choice. And yet, its very simplicity, accessibility and cheapness have often led to its neglect. The tendency of the human mind to look afar off and choose the complex, while neglecting the simple near at hand, is proverbial.

RATIONAL

There are a few basic principles to be observed in the application of water to disease.

1. We must know the condition of the patient, especially his circulatory apparatus and his resistance, that is, his endurance or fatigability and his capacity to react, in other words, the state of his vegetative nervous system, in order to decide upon the severity of the treatment; for water used therapeutically is a powerful agent and like other useful remedies, such as drugs, can do much harm.

2. We must decide whether sedative, tonic or stimulating effects will be most beneficial to the condition under treatment, for, according to the procedure used, water can do each of these things admirably.

3. We must know the physiological effects of the various hydrotherapeutic procedures. Water at 96° F. is spoken of as neutral and is neither tonic nor stimulating. However, it is definitely sedative if the body is immersed in it for a fairly long time. You will recall that the average surface temperature of the normal skin is about 72° F., but varies according to the temperature and humidity of the environment, as well as the physical condition of the individual. The nearer the environmental temperature approaches the internal temperature of the body (98.6°) the more work is taken off the temperature regulating apparatus and the more relaxed the vasomotor mechanism becomes, and the blood is also more evenly distributed. The nerve terminals in the skin carry back to the vegetative nervous system and thence to the cord and brain sedative impulses which serve to relax the muscle tensions and so have a quieting influence upon the body and mind. Perhaps this is why persons residing in warm climates are more listless and relaxed. At any rate, we have in medicine no better sedative than the prolonged use of water at a neutral temperature.

If now we apply water above 98° F. or below 90° F. we begin to get stimulating or tonic effects and at very extremes of temperature, hemostatic effects, and so greater care and judgment must be exercised in their use. Hot water, i. e., over 100° F., first stimulates the vasoconstrictors for a few mo-

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ments, then paralyzes them, resulting in passive congestion of the skin, drawing the blood from the deeper tissues and causing blushing and an increase of slowly moving blood in the capillaries. If, on the other hand, cold water (60° to 80° F.) is applied over a short time (one half to two minutes) the same but more intense vasomotor constriction occurs with blanching of the skin but soon is followed in health by a tonic dilatation of the capillaries, active reaction in contradistinction to the passive reaction from hot water. The amount of active reaction that the patient gets from treatment is one way to measure the degree of benefit which he obtains from it.

The application of hot or cold water for its tonic effects is one of the best methods of reaching and toning up the vegetative nervous system which is really the basis of our mechanism of well or ill feeling. And since our feelings are the basis of our state of contentment, you can at once see what a potent agent water may become when intelligently used.

In all asthenic states and all nervous and mental diseases, with the exception, perhaps, of acute mania, there is a lowering of the tone of the vegetative nervous system with resultant ill feeling and disturbed bodily sensations. If the individual has a well balanced mind (i. e., a well developed and properly nourished brain) the condition resulting will be merely one of asthenic lassitude and fatigability—perhaps irritability, fatigability and depression. He will retain good insight into his condition and will cooperate in his treatment. This is the type of patient with which most of you at times deal.

On the other hand, if he has inherited, or acquired through disease, various toxins or chemical poisons, a loosely knit mind prone to misjudgments, he may readily put a significance upon these perverted feelings which is not a correct estimate or deduction. We cannot get his point of view because we have not the same bodily feelings and hence not the same outlook on life; the world—his world—is changed, and so he reads this change into his objective world, hence his delusions.

I cannot go into the psychological twists which may grow out of these misinterpretations. I desire only to emphasize the idea that they probably, for the most part, grow out of disturbances of the vegetative nervous system and its correlated endocrine regulators and that in the use of water we have a potent means of helping this state of affairs. Now, disturbance of the vegetative nervous system may be functional or organic. Dementia precox probably in its more severe forms belongs to the organic group, although as yet we have no pathological evidence beyond that of general organ inferiority. The organic diseases we may not modify; the functional ones we can often cure and the stimulating, tonic and sedative effect of water is one of the simplest and surest methods.

I do not mean to convey the idea that it should be used to the exclusion of the other remedies but rather in conjunction with them. At our sanatorium, hydrotherapy has been in use in all chronic and many acute forms of illness since 1879, when Dr. Dio Lewis put in his famous Turkish baths. We have had recourse to all that modern medicine has to offer: hygiene, drugs, sera, electrotherapy and heliotherapy but water remains our sheet anchor and no patient stays long at the sanatorium without receiving some form of hydrotherapy.

I used to wonder, when physiotherapeutic societies were first organized, why it was that I had so little to say about these methods, which I had been using so many years—even from boyhood. I know now. It was because we used none of them exclusively but always in combination. Hence, I was unable to say just what any one of them did when used alone.

One precaution I want to speak of before coming to methods. I have said we must know the condition of the patient's cardiovascular system before prescribing water treatment, and I would double the precaution in patients over fifty. If there is much arteriosclerosis, water of extreme temperatures from normal should be used with great caution. I am speaking now, not of local application, but of tubs and packs and medicated baths as the Nauheim. The reason for this is that the vessels being irregularly fatty or stiff are incapable of reacting evenly to the tonic effects and so we may get an uneven distribution of blood with congestion or anemia where it will do harm. If the coronary artery is sclerosed, and who can say at times whether it is or not, the sudden primary increase in blood pressure from complete submergence in extreme hot or cold water may prove harmful or fatal. In cerebral anemia from the tonic reaction stage, the treatment may provoke great excitement with increase of mental symptoms and exhaustion. So, while I would not say that water treatments are entirely contraindicated in these cases, I would advise proceeding with caution and giving specific directions to the person giving the treatment.

METHODS AND PROCEDURE

I will not attempt to make a complete list of hydrotherapeutic procedures but only refer to those which I have found useful in my special work.

PROLONGED NEUTRAL TUB BATH

This bath is sedative, circulatory regulator, and eliminative.

Equipment.—1, A large tub; 2, a bath thermometer; 3, a sheet of canvas to cover tub; 4, a blanket to wrap patient in (if necessary).

Technic.—Draw a tub of water at 97° F. to the overflow. Put patient in tub and immerse as completely as possible. Force fluids, keep ice compresses on the patient's head and watch his pulse. If you have the patient's cooperation, this is easy; if not, as in some cases of acute mania, it may take from two to four nurses at first. Occasionally, a patient is so disturbed and resistive that he cannot be kept in the tub; then the pack may be substituted. If the neutral tub is used for insomnia, asthenic or cardiac conditions, twenty minutes to an hour, according to the reaction and comfort of the patient, is sufficient. If you are treating a disturbed mental state the time may be lengthened to two or three hours, twice a day, or given for several hours at a time. In this latter case it is well to take the patient out occasionally and apply lanolin or other heavy grease to the whole body.

In the extreme agitation of chorea, I have found the neutral tub one of the best sedatives. Dr. Klapp, superintendent of the Allentown, Pa., State Hospital, has had installed some batteries of three large tubs

in which the patients can turn around sideways and thrash about, sit up, eat and smoke. Tubbing is an essential factor in any such hospital. A trained attendant is constantly on hand in the room.

Various control valves have been constructed to keep the water at an even temperature but none of them are absolutely dependable or even necessary. The thermometer in the hand of the attendant is safest. Restraint of the patient in the tub is only mentioned to be condemned. But a rubber or canvas sheet to cover the tub protects the patient and helps to keep the temperature even.

THE PACK

The pack is also useful as a sedative and promotes nutrition by stimulating metabolism. In some German sanatoria, it is customary to put all neurotic patients in packs at bedtime for the night. It has the added advantage (sometimes, however, a disadvantage) of acting as restraint by enforcing muscular quietude. It consists in placing the patient in a tight wet jacket. Dry packs, used as restraint, are not allowed by law in mental hospitals in this state.

Dr. Boris Sidis, from his experiments on sleep, pointed out that there were three main essentials: 1, Reduction of external stimuli to a minimum; 2, monotony of rhythm as from the heartbeat or respiration; 3, bodily immobility or muscular quietude. He found that if he bound a frog by wrapping it in a gauze bandage, it promptly went to sleep.

The wet pack fulfills most of these requirements as soon as reaction sets in, that is from ten to twenty minutes. The surface capillaries dilate, giving off some of the body heat to the wet sheets. Reflexly, the nervous system is quieted by the action of the water on the end plates of the skin and the stillness of the body and quietude, and sleep frequently ensues unless the patient is too disturbed, mentally.

Equipment.—1, A single bed stripped of bedclothes; 2, a long rubber sheet; 3, two single blankets; 4, three single sheets; 5, a pillow covered with rubber sheeting; 6, a dozen safety pins, horse blanket size; 7, a basin of water at desired temperature—usually from the cold tap. It is almost impossible to give a hot pack with sheets. They cool too quickly in handling. If a hot pack is indicated, as in kidney conditions, blankets must be used in place of sheets and handled rapidly. Cold packs are contraindicated in most kidney diseases.

Technic.—Completely cover the mattress with the rubber sheet. Over this spread two blankets. Wring out the sheets in water. Spread one fully open, over blankets. The other two should be folded once on the long way and placed across the wet sheet, so that the top one will extend from the patient's neck to the buttocks and the other lap over and extend to below the feet. (In quiet or nonmental patients, two or even one sheet may be sufficient.) The patient is now placed nude, in the middle of the sheets and the upper sheet wrapped rapidly about him, tucking it in so as to surround the arms (first on one side and then the other) and binding them to his sides. There is a knack to this. Next the feet are similarly wrapped. If patient is chilly, a gentle slapping may be applied all over. Then the under sheet is neatly wrapped and folded about the shoulders and neck and feet. Finally, the blankets are brought over and around the patient, folded neatly and pinned at foot intervals for the entire length. Place a hot water bottle to the feet and an icecap to the head and watch the pulse. The patient should warm up and become quiet. However, he should not be left alone at first, as some patients, if weak, may suffer from shock and require a hot drink or even aromatic spirits of ammonia or have to be taken out, but this is a rare occurrence. The patient may be kept in the pack for from one to three hours (which is the longest the law allows). He must be taken out, rubbed with a coarse towel, or given a warm sponge bath in cases where it would not excite the patient, then put to bed if quiet enough. Of course in cases of acute mania the patients often want to be up and doing and will not rest.

HOT SPINAL FOMENTATIONS

This is another procedure of great use as a sedative in mild cases of nervousness and at night for insomnia.

Equipment.—1. Some coarse kitchen toweling made up like a roller towel about two feet long with two sawed off broom handles inserted in the ends. 2. A piece of old flannel blanket about eighteen inches wide and as long as the patient's spine, folded to six inches in width. 3. One small blanket folded to cover the back. Bath towels may be used in place of both of these but do not hold the heat as well. 4. Some boiling water.

Technic.—The folded blanket or towel six inches by twenty-four inches or so is immersed in the boiling water and placed in the wringer, the two ends being twisted until it is fairly dry and steaming. In this condition it is carried to the bedside and, with the patient lying comfortably on his face, is taken out of the wringer and laid, gently at first, along the patient's spine from neck to sacrum and quickly covered with the dry blanket or towel. The hot towel is changed every five or ten minutes when it gets cool for three to six times. The back is then dried and the patient left comfortable for sleep. No procedure except, perhaps, the deep therapy lamp, will help backaches so rapidly and the hot spinal compress is certainly preferable in insomnia. In acute colitis it helps wonderfully.

The tonic and stimulating treatments all have for their object the creating of an active hyperemia, rather than the passive one produced by the foregoing methods. Three factors are involved, 1, the time or duration of application; 2, the temperature, and 3, the pressure. While many of these treatments may be given at home most of them require special apparatus in order to obtain the best results.

THE SHOWER OR NEEDLE BATH

The mildest stimulating treatment is the simple rain or body needle douch. In the home the pitcher pour on the spine may be used while the patient sits in the tub. The rain shower is turned on at a comfortable temperature and gradually over a minute or two is run as cold as the patient can stand it. He is then briskly rubbed down with a bath towel.

The shower may be preceded by a few minutes in the electric light cabinet to warm him up and various degrees of heat and force of shower may be used according to the endurance of the patient.

The stronger patient may come from under the

shower and be vigorously rubbed with ordinary table salt and then return to the shower when he rubs the salt off as the water runs cold. He is then dried. This is a very stimulating treatment and leaves a great sense of well being. It is called the salt glow because it leaves a very active hyperemia. As a general tonic it has no equal.

SCOTCH DOUCHE

This is for the more robust cases and is especially useful for alcoholics. The patient is placed in the electric light cabinet, his feet in a foot tub of warm water and a towel wrung out in ice water about his head. Here he remains until he perspires profusely (ten to twenty minutes). He then goes under the warm shower to rinse off. The hot (105°) and the cold (65°) hose is next turned on and played upon him alternately beginning at the feet and slowly working over the entire body. Then twenty to thirty pounds of pressure (about street pressure) is used at from a distance of from twelve to fifteen feet for two to four minutes. This massages the tissues and produces an active and deep hyperemia which greatly relaxes restlessness and produces a comfortable glow and quickens metabolism.

I believe that there is no procedure in medicine which so well reestablishes functions without any unpleasant or harmful reaction—excepting, of course, exercise and this should be added, through the day, in the form of walking, medicine ball, etc.

I might describe many other methods of applying water in disease but these are the ones we have found especially useful.

When we are dealing with sluggish or otherwise disturbed functions and local congestions, as we do in practically all nervous and mental conditions, for the trouble is often as much or more in the body than in the mind, and in toxic states, especially in the bowels, there is no single agent that alone or in combination will give such satisfying results as water properly used.

496 Commonwealth Avenue.

Some Aspects of the Biological Action of Light

FRANZ NAGELSCHMIDT, M.D.
Berlin

The great confusion present in the literature of light treatment is due chiefly to two factors: one is the insufficient consideration of the physical composition of the radiations emitted by the usual lamps as well as the difficulty of the measuring methods; the other is caused by the most complicated mode of reaction of the biological object, especially of man, to light.

If we speak of light simply as of the sun or the carbon arc lamp, this designation is very inexact. For these sources of light contain besides visible light, other invisible, infrared heat radiations and invisible ultraviolet rays of different wave lengths. And if we speak of ultraviolet light, we are using ultraviolet rays of widely varying biological efficiency, beside visible light and some heat radiation.

PSYCHIC EFFECT OF LIGHT

Many biological reactions are confined to very narrow limitations of wave lengths and even spectral areas situated close together have partially opposite actions. Let us only consider the small spectral parts of visible light comprising one single octave, i. e., the wave lengths from 7600 to about 36 Angstrom units. We here find very different actions. If we observe the indirect psychic effect through the eye, we notice that the different colors act evidently quite differently. It is not a coincidence that in churches and mausoleums the blue and violet tones are prevalent while in ballrooms and places devoted to social pleasure the reds and yellows prevail. The latter have a vivifying and exciting psychological action, while the violet end of the spectrum acts in a soothing and sedative manner. Therefore the bedrooms in hospitals, especially in asylums for the insane, where turbulent patients are kept, have, or should have, violet lighting at night.

PHOTOTROPISMS

Many examples could be alluded to in the territory of zoology and botany which are known to us as *phototropisms*. In physics blue and violet rays excite for instance a bright phosphorescence on a screen of zinc sulphite, which persists in the dark for hours. If you transport such a brightly lighted screen to a dark room, cover one half of it by a metal plate and irradiate the other half by a red lamp, the phosphorescence is instantaneously extinguished while the covered half still shines brightly. This effect is more definite and quicker if one excites by ultraviolet and extinguishes by infrared. But this experiment proves that radiations which in the spectrum are only distant three hundred millimicrons can have even opposite actions, which annul each other. Three thousand years ago the Chinese knew and practised the treatment of smallpox in the dark room and Finsen has reintroduced this treatment as negative phototherapy. But it seems to me uncertain if we have to deal here really with a negative light therapy, or if the action of the red rays is not too to be considered as a positive one, only as one which is opposite in this case to that of the blue radiation with shorter waves. (See later neon light.)

So, if we observe on so narrow a space, differences of actions or even opposite effects, it is not astonishing that in farther distant areas still bigger differences occur. If we irradiate simultaneously with differently acting radiations, it is clear that their action will be a very complex one and represents a result of the partly opposite, partly equal, actions.

EFFECT OF TEMPERATURE ON ENERGY DISTRIBUTION IN SPECTRUM

Further, the distribution of energy in the spectrum is greatly dependent upon the temperature. If, for

instance, a carbon arc lamp is burning with a certain amount of current, the carbon gases in the light arc show a temperature to which certain intensities of radiations in the spectrum correspond. If we raise the intensity of the current, the energy distribution in the spectrum changes and the maximum proceeds more against the short wave part; opposite if the current intensity diminishes. Such variations occur almost constantly because the line tension varies, the carbons burn unequally or are not equally composed, air currents are disturbing, etc. In consequence the relative intensity of radiation of the single spectral territories will change, too, and the total action as sum or difference of the single actions will be a different one.

Conditions are similar in the sunlight. While practically the sun is to be considered as a constant source of radiation, yet the composition of its radiations striking the surface of the earth changes depending on the position of the sun, i. e., the time of day or the season, on account of the different direction of the rays, of atmospherical influences, dust and water content, clouds, air currents, etc. The artificial alpine sun, too, is much dependent on the line tension and on its own heating. In the first ten minutes of its starting, variations of fifty per cent. in the intensity and more may occur and mercury vapor lamps of different factories show quite different intensities over the ultraviolet spectrum concerning the energy distribution.

The same is true of other lamps and so it is clear that all investigations and practical experiences with a combination of different radiations at the same time can only give an empirical and by no means exact knowledge of the action of light. As shown by the above we have to deal with different actions of the different parts of the spectrum.

METHODS OF MEASURING ACTION OF LIGHT

The second difficulty lies in the methods of measuring. We are in possession of only one way to state the exact value of a light source, that is, the spectral decomposition of the emitted rays for qualitative characterization of the radiation source, and the quantitative measurements of the intensities in the different spectroscopically separated spectral areas by very sensitive galvanometers or thermopiles. Both examinations are very difficult, take a long time, demand a thorough training in physics and cannot be employed in daily medical practice.

Now let us suppose that this question may be solved or that the factories deliver us monochromatic lamps with a well defined output of radiant energy which in fact is not yet the case. Even then new difficulties would arise. If you apply radiation to the surface of the body, it is practically impossible to make this application so that all rays hit the body at the same angle; from the angle depends to a very high degree the reflection and from the reflection is dependent how much of the radiation is lost for therapeutical application. You can easily prove that even for ultraviolet rays the reflection plays an important rôle; if you take an ultraviolet lamp closed by a dark filter which permits the passage of ultraviolet rays only and not of visible light, and then expose a fluorescing screen not to the direct radiation of the lamp but to reflected rays, for instance from your hand, you see that a very strong fluorescence takes place. This reflection is further dependent on the state of the skin, on the position of the body which is to be treated, the sweat production, the pigmentation, or the presence of hyperemia or anemia. So even the exact control of the energy output of the lamp will never give an exact estimate of the dose actually applied, as the above described variations vary further for the different spectral areas.

These difficulties seem very hard to eliminate. Still greater difficulties arise at the moment the light enters the body. We believe that radiations of light are only active as far as they enter the tissue, even at a very superficial layer, and are absorbed. But we do not know exactly which part of the entering rays is absorbed, at the different depths of the tissue, as an unknown part is dispersed by passing through the tissues, another unknown part is transformed into heat, another one into chemical energy, another into other light radiations (for instance fluorescence), another one is stored by the pigment nuclei and some may be stored in some other still unknown way. The specific effect, however, depends on the absorption in a special tissue.

DIFFICULTY OF ESTABLISHING LIGHT THERAPY ON AN EXACT SCIENTIFIC BASIS

It seems hopeless for the moment, considering all these very complex relations, to bring light therapy out of the present empirical stage, to an exact scientific status. But much could be done if the factories would at least provide us with light sources delivering monochromatic light, a task which I gave to some of them many years ago without practical results. The only lamps which partially approach this demand are the dark infrared lamps, the neon lamp, and the mercury quartz lamp. But even here the spectral spaces are not yet narrow enough. Some examples may prove this.

Visible light is differently absorbed by normal serum and pathological serum and the same is true for ultraviolet rays. Normal serum, for instance, has an absorption maximum at 2800 A, a minimum at 2530 A, and later to shorter waves a very great increase of absorption. For serum, containing gall stain, the maximum lies between 2500 to 2900 A, but if you mix artificially serum and gall stain, so it absorbs differently, that shows that there may be perhaps still some other absorbing substances in the icterous serum.

Another example for visible light is in the growth of mice tumors. The wave lengths of 7200, 6500, 5500, and 5000 A increase the growing of sarcoma; 6700, 6000, 5250, 4700 A decrease sarcoma. But 6500 A, which increases sarcoma, decreases carcinoma. So we observe that very narrow spectral areas in the visible part of the spectrum have a different effect and the difference is even present for the same wave lengths for an epithelial tumor or one of connecting tissue. It may be that absorption bands of the pigment play here an active rôle.

If you expose a series of mice with tendency to spontaneous tumors to sunlight, the percentage of mice tumors will increase; in the dark it will decrease.

For bacteriological examinations the strongest bactericide is shown by the wave length 3000 A. This action belongs to a very narrow zone while other

spectral parts have an action which is three to four thousand times less.

PRODUCTION OF ERYTHEMA

If we expose the skin of the arm to sunlight we shall have a light erythema, if the dose is sufficient, but a place protected by a piece of glass will remain free of erythema. This experiment has been made by Finsen. As the sun contains ultraviolet rays at the earth level only about down to three thousand Angstrom units and through glacss all visible light and ultraviolet rays pass, down to three thousand two hundred Angstrom units, the erythema producing area must be situated between 3000 and 3200 A, for sunlight. Some shorter ultraviolet rays have this effect, too; but experiments I have made with a new mercury quartz lamp producing ultraviolet rays down to 1900 A have proved that the shorter ultraviolet rays have no considerable effect on the production of erythema.

So we see once more that even lamps producing chiefly ultraviolet rays must be of very different action depending on which region of ultraviolet the maximum output of energy is present. One lamp may even produce the active ultraviolet rays, but in a not sufficient quantity; yet at the spectroscopical examination the qualitative presence of the desired rays may be shown and only the quantitative examination would prove whether the amount of this radiation is sufficient or not.

THE NEON LAMP

The neon lamp corresponds to the demand of monochromatic lamp best of all so far. It emits only red and yellow rays without infrared. This lamp has a very marked, positive action on pain and besides has strong antileucotactic and antiphlogistic actions. It is necessary to apply the neon lamp in a dark or nearly dark room, because, as we have seen, the white light contains rays acting in the opposite direction to the red ones.

Altogether we may conclude that we are not yet in possession of radiating apparatus producing one narrow space of spectrum just needed for a certain purpose and that our measuring methods are still far from perfect. On the other hand, our clinical and experimental researches have provided us with a great number of single facts concerning light biology, so that we are able in practical medicine to secure a good many therapeutical results with sufficient certainty.

RICKETS

We know that we can cure rickets, the spontaneous rickets in children as well as the experimental in rats, with ultraviolet light. This action is produced only by the space between 2900 and 3200 A. The optimum is situated at 2970 A. Radiations of rather different —greater or smaller—wave lengths are inefficient. Further it has been proved that black rats require much larger light doses to show the antirachitic effect than albino rats. And so in men, too, we shall have to measure the light doses, depending on the pigmentation of the skin. On the other hand, we know that we can heal natural or experimental rickets by administering vitamines, and so we may suppose that the curative action of sunlight in animals and men is analogous, i. e., it produces vitamines.

We can just as well influence the blood level of calcium and phosphate and control troubles in the production of bone substance in children. We know that cholesterol is influenced in the skin, the blood, and in internal organs, for example, the liver; many other actions are produced, for instance, the relation of albumin to globulin in the serum and the degree of sugar tolerance are influenced.

BIOLOGICAL ACTION OF LIGHT BATH

If we consider the biological action of a light bath, this action cannot be explained in a simple way. Sonne has shown that on the inner side of the forearm one can endure on a spot of about one inch in diameter 3.11 calories per sq. cm. and per min. of visible rays; 1.79 calories of inner infrared rays, and 1.33 calories of outer infrared rays.

If you apply visible light on the same place with the greatest tolerable intensity, the skin temperature rises for visible light to 43.8° C., for infrared to 45.5°. But after fifteen seconds it changes; then there is a temperature of the skin one degree higher for visible light than for infrared. It seems that the deeper situated layers are more intensely heated by visible light.

If you control the temperature at different layers during the application of infrared radiations, you find that to a superficial temperature of 45.5° C. corresponds in one cm. depth a normal temperature of 37° C. If by visible light irradiation the surface reaches a temperature of 43.8° C., in 0.5 depth a maximum of 47.5° C. has been proved, while infrared shows in the same depth only 41.7° C., i. e., 5.8° less. It proves that we are able to heat the blood in and under the skin by means of light rays to a temperature several degrees higher than we can with the maximum tolerable intensity of infrared radiations.

If we consider that all these changes and many others, reference to which here would lead too far, are produced by an energy which is absorbed, at least partially, in the most superficial layers of the skin and do not even reach the superficial capillary layer, we can only explain this action by supposing a direct or indirect irritation of the sympathetic nervous system and by so changing the balance of the sympathetic and parasympathetic nervous systems as to influence the internal secretions. We know that these mechanisms are very complicated, even in response to much simpler and more definite irritations occurring in experimental investigations, and much depends not only on the individual but on the momentary disposition of the individual in regard to the response of the different functions to one and the same irritation.

CONCLUSION

In conclusion I would state that without well defined monochromatic light apparatus and exactly worked out measuring methods no further scientific investigation can be accepted as reliable, and it seems that we shall have to repeat most of the experimental investigations done in light up to the present time by controlling as many of the above described factors as possible in order to secure reliable and practicable results. Then only will light therapy become a real science.

The Static Modalities in Gynecology*

MARY L. H. ARNOLD SNOW, M.D.
New York

The status of static electricity in gynecology as an electrotherapeutic agent of value is dependent on results, be they palliative or curative, being limited in the prognosis by the cause and conditions presented.

The causes of gynecological derangements are functional or organic, varying with age. In youth the most common condition is due to interference with the menstrual function which may be a reflex state due to disturbed nutrition, rarely developmental, or else inflammation, primary or secondary, as caused by constipation, disease, sexual habits or trauma. Sometimes functional disease under favorable conditions becomes organic when endometritis or later even ovaritis may occur. In older patients trauma, disease, infection, subinvolution and even nutritional disturbances are causative factors. Considered as a whole, the outstanding representative element in results of causes is stasis with active or passive congestion.

The problems presented are representative of the removal of inflammation with its accompanying symptoms, chief of which is local stasis, evidenced by tenderness and swelling, and in cases involving the uterus, with irregularities of menstruation with misplacements and their consequent conditions.

The aftereffects of inflammation are infiltration and increased tension with or without pain. There is an altered integrity of the part with changed or limited functional activity often associated with reflex neuroses.

Recognizing the premises of the problem presented, it may be readily appreciated that for palliation or relief, the remedial measures must primarily affect the removal of the local stasis in order to relieve the active or passive congestion. By mechanical, chemical and thermal measures it is possible to restore local metabolism, and to correct reflex manifestations and nutritional defects and thus further the elimination of wastes, and promote reconstructive processes. Treatment must determine the site of local pain, remove infiltration and lessen or overcome muscular spasm or tension. As in all departments of medicine, the causative factor must be controlled or corrected.

The static modalities are preeminently most efficient means when used alone, or together with other physical measures for the treatment of gynecological conditions. The supplementary modalities include the sinusoidal or wave generator currents for mechanical exercise; the high frequency currents for their chemical and thermal effects, restorative in action with diathermy or destructive by desiccation, fulguration or carbonization; the constant current for its destructive action; mechanical vibration for its massage effects, or nerve inhibition or stimulation; ultraviolet rays for their antiseptic effect and stimulating activity; as well as the carbon arc lamps promoting metabolism, and the x rays and radium inhibitive or destructive in character.

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STATIC MODALITIES EMPLOYED IN GYNECOLOGY

The static modalities employed in gynecology are, 1, the static wave current; 2, static sparks; 3, static brush discharge; and 4, the static induced current.

The static wave current is devoid of disagreeable sensation and absolutely free from injurious effects in noninfectious inflammatory conditions. The effects are mechanical, producing alternate contraction and release of muscular and elastic tissues with a force whose strength can be regulated to conditions. "Locally (1) conditions of stasis and local stagnation are overcome by the action of the current with restoration of circulation and local tone of the arterioles with resumption of normal conditions with stasis removed. These effects are not merely superficial but varied in their depth of penetration in proportion to the amplitude of the current which is varied by increasing or slowing the speed of the machine and by lengthening or shortening the gap." Independent contraction (2) of the muscle cells is produced in this manner, relieving stasis locally, restoring circulation and removing muscular tension. Amelioration of or freedom from pain follows. "Heat production (3) due to a greater degree of tissue oxidation coincident to general increase of metabolism is one of the remarkable effects of this modality." The effects on general metabolism are striking. It aids in eliminating tissue wastes (4), overcomes muscular tension and promotes the functional activity of a part as is seen in the results of the treatment of dysmenorrhea. With this change is a marked amelioration of the nervous symptoms with a feeling of well being on the part of the patient.

The glass vacuum tube, in place of the metal used for the wave current, "relieves superficial local congestion and induration (5)" and also has an "analgesic action (6)."

Static sparks when given with or without a spark director relieve muscular tension and favorably affect local infiltration with stimulation of the circulation.

The static brush discharge is rubefacient and depleting in action, draining the tissues, thus relieving local stasis and tension, reducing swelling and rapidly removing ecchymoses.

The static induced current—a two pole current—produces the same local mechanical effects at the two sites covered by metal electrodes as does the wave current at a single site.

The gynecological conditions amenable to treatment are amenorrhea, cervicitis, endometritis and cervical erosions, dysmenorrhea, uterine retroversions not complicated with adhesions, vaginismus, ptosis, hemorrhoids, rectal fissures, spasmodic stricture of the anus, subinvolution, renal incontinence and coccygodynia.

AMENORRHEA

Amenorrhea with total absence or scanty flow, menstruation having been present, when not due to surgical operation, paralysis, malignant disease, ob-

structive lesions or cysts, is relieved by the use of radiant light and heat anteriorly and posteriorly over the pelvis for one half hour daily followed by the static wave current applied with a proper electrode per rectum for twenty minutes daily, the rectal electrode being attached to the positive pole of the static machine, the negative side being grounded with a spark discharging at the spark gap three to three and a half inches in length or less, regulated according to the patient's tolerance. Diathermy may be used for three quarters of an hour or one hour in place of or in combination with the radiant light and heat treatment with a view to increasing the local circulation in the pelvic organs. Treatment should be at least on alternate days for one month. The placing of the electrodes is important and is best accomplished with the patient lying on her side with knees flexed; the electrode is then inserted through the anus and carried up so as to lie pressing against the uterus. The static treatment as given per rectum is a most desirable form of treatment for such cases. If necessary to have treatment a second month, it may be given three times a week until ten days before menstruation when treatments should be given daily.

CERVICITIS AND ENDOMETRITIS

Cervicitis and endometritis are treated with the static wave current, or diathermy per rectum with the metal electrode. With married women treatment is also given per vaginam, a glass vacuum tube being placed against the cervix when the static current is used; or a metal electrode is employed when diathermy is selected. The selection of the modality depends on the inflammatory condition presented, whether noninfectious or infectious. Associated cervical erosions caused by a varicose ulcer are corrected by overcoming the congested condition present as in a uterus that is swollen, infiltrated and indurated so the tissue is impoverished. Both the metal electrode per rectum to affect the muscular tissue of the body of the uterus, and the glass vacuum vaginal electrode to affect the cervix in connection with the static are used, each for twenty minutes. An associated menorrhagia, or metrorrhagia, should be treated by the x ray.

VAGINITIS

For gonorrheal vaginitis and endometritis, diathermy may be used with adequate heat to destroy the gonococci or the static vacuum tube current which may give favorable results.

DYSMENORRHEA

Dysmenorrhea, when associated with retroversion of the uterus, is successfully treated in all cases not due to an incurable, irremovable, strictly surgical cause or an adherent appendix. The treatment is given with the static wave current per rectum with a metal rectal electrode applied for twenty minutes daily for one month between periods and on alternate days for a period of eighteen days the next month, after which daily treatments should be given for ten days or until the period recurs. If dysmenorrhea is associated with a scanty flow, radiant light and heat over the abdomen and back for twenty minutes preceding the static treatment or diathermy may also be employed. If dysmenorrhea is associated with a profuse and prolonged flow, the x ray should be used three times weekly for a short period of time, employing a five inch spark resistance with two milliamperes of current for fifteen minutes or less as conditions indicate, with two mm. of aluminum as filters at fourteen inches distance each time making two exposures, one anteriorly and one posteriorly.

This method of treating dysmenorrhea was discovered in the treatment of a case of constipation twenty-two years ago. The patient had suffered from dysmenorrhea for twelve years. After one month's treatment with the static wave current per rectum with a metal electrode which was used for the treatment of the constipation, the patient was menstruating without pain. Since then, the results in these cases have been uniform.

VAGINISMUS

Vaginismus, whether true, or pseudo or secondary, is treated with the vacuum tube wave current, the electrode being attached by a connecting cord to the positive side of the static machine, the negative side being grounded, the spark gap not exceeding three inches, the length of the gap being limited on account of an otherwise possible puncture of the glass. The duration of treatment is twenty minutes. Sometimes in severe cases even the smallest handle of an electrode must first be used, the electrodes being followed by increasing sizes as improvement progresses. The causes of secondary vaginismus (7) as early hemorrhoids, rectal fissures, vaginitis, urethral caruncles, cervicitis, cystitis, displacements of the uterus or ovaries, must be relieved together with the treatment of the vaginismus. This method of treatment is easily given by the operator, uncomplainingly accepted by the patient and the results, as a rule, are very successful.

Case I.—The patient, Mrs. X., had suffered from vaginismus for ten years. Treatment was given as above described. There was complete relief within a month.

The average case is relieved with comparatively few treatments. This method has proven successful in the hands of Dr. Barton Cooke Hirst as noted in his paper of recent date.

ENTEROPTOSIS

Intestinal or gastric ptosis may be improved by the static wave current applied to the abdomen by means of a metal electrode. The length of treatment is twenty minutes and the frequency of application is daily at first, the intervals between treatments lengthening with improvement. The effect is to tone up the abdominal muscles and thereby increase abdominal tonicity and the patient's well being.

HEMORRHOIDS

Hemorrhoids, if sporadic, may be relieved by the wave current employing the glass vacuum hemorrhoidal electrode followed by the wave current over the liver. Otherwise the desiccation method of Dr. William L. Clark is a very practical and successful method.

RECTAL FISSURES

Rectal fissures are treated with the vacuum tube wave current attached to the negative side of the static machine by a connecting cord, the positive side

being grounded. The length of the spark gap is three inches. The duration of the treatment is twenty minutes. The negative side of the static is selected owing to its greater chemical action.

STRICTURE

Spasmodic stricture of the anus or sigmoid is overcome by the use of the static wave current per rectum, employing a rectal metal electrode or a special one for the sigmoid. Otherwise mechanical vibration may be used, employing the conical vibratode well lubricated and applied with moderate speed, and full stroke, of such a vibrator as the Victor, for five minutes daily.

UTERINE SUBINVOLUTION

Subinvolution is successfully treated with the static wave current applied per rectum as in the treatment of dysmenorrhea, using the rectal metal electrode attached to the positive pole, the negative being grounded, the spark gap being three inches, and the time twenty minutes, to be followed by the glass vacuum tube per vagina with the wave current for fifteen or twenty minutes daily. The patient lies on her side, assuming the Sim's position for the rectal treatment, and on her back with limbs flexed for the vaginal treatment. For subinvolution with menorrhagia the x ray is used to arrest the hemorrhage.

Case II.—The patient, Mrs. S., gave a history of ectopic pregnancy after operation, followed by a long period of illness. She was melancholic and presented the picture of a nervous and physical wreck. The diagnosis was uterine subinvolution with associated constipation. The treatment was radiant light and heat for its tonic effect; mechanical vibration for the correction of the reversed postural relationship of the patient's blood pressure; static wave current per rectum with the metal rectal electrode, and per vaginam with the vaginal glass vacuum tube. After eight weeks' treatment the relief of the pelvic condition was complete and her melancholy and nervous symptoms disappeared. Three years later her brother, a physician who referred her to us, reported complete recovery and continued good health.

Case III.—The patient, Mrs. M., suffered from a congested uterus which was five inches in length, and the cervix was two inches in diameter. Her only child was seven years old. After one month's treatment she became pregnant, a miscarriage at six months was followed by profuse hemorrhages which were arrested by the use of the x ray and the static wave current per rectum. The hemorrhages were arrested after two treatments. She became pregnant and has since borne two children. Now twenty years since, she has not had further pelvic disturbances. The same patient was treated for and cured of exophthalmic goitre.

INCONTINENCE OF URINE

Sudden incontinence in women when due to cold is relieved by the static wave current applied by means of a metal electrode placed over the bladder. The length of treatment is twenty minutes. Usually three or four treatments will suffice. Dr. Sinclair Tousey (8) in cases where one symptom is a congested vesical trigone, uses the static induced current applied rhythmically by means of a metal electrode in the vagina as close as possible to the vesical trigone and a large metal electrode over the hypogastrium. Treatments are for fifteen minutes, two or three times a week.

COCCYGODYNIA

Coccygodynia, usually the result of a fall, is treated by having the patient sit on a metal electrode which is divided and bent at right angles so that its upper half covers the coccyx posteriorly, and the sacrum. The metal electrode is about ten inches long and eight inches wide, being cut across in the middle from each side for a distance of about three inches. It is in the line of this cut that the electrode is bent. Associated bruises are relieved by the static brush discharge. It should be applied sufficiently long to get a rubefacient effect. The local muscular tension is still further relieved by static sparks applied by means of a spark director. Usually less than six treatments in recent cases give complete relief. Occasionally the static wave current with a metal rectal electrode applied internally is an effective aid.

BACKACHE

Pelvic backache often follows childbirth or a surgical operation whereby a sacroiliac strain or possibly a subluxation occurs. Radiant light and heat followed by the static wave current, together with or without manipulation, and later sparks are indicated. Lack of time forbids a lengthy consideration.

SUMMARY

1. The static current favorably affects stasis when the inflammation is noninfectious in character.

2. Stasis with active or passive congestion is the representative factor of most pelvic conditions.

3. The static current for gynecological application is mainly the static wave current with a metal or a glass vacuum electrode, although static sparks, the static brush discharge and the static induced current are also of value to meet conditions as presented.

4. Electrotherapy like surgery has a selective field in the realm of gynecology. It does not infringe, nor does it do the impossible. Only by a careful consideration of conditions presented and a selective discrimination of the modality indicated to meet requirements will palliative or curative results follow.

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1650 Broadway.

Some Types of Neuritic Reflex Pains Not Generally Recognized*

Treatment by Physical Measures

WILLIAM MARTIN, M.D.
Atlantic City, N. J.

We have learned long ago that pain from organic conditions may be referred to distant points and naturally look for its source with some feeling of security in finding it, but the type of pains under discussion here are not so generally recognized, since they occur at times where one would least expect them to locate. These neuritic pains naturally follow the nerve distribution, and it is for this reason that they are at times problems to be solved.

It would be impossible to deal with all such conditions in a necessarily short paper, so it will be my intention to take up only a few main types, and treat even these briefly, touching the high points for sake of brevity.

Of those that may be considered to be of great importance from the viewpoint of intensity and seeming gravity, we have pain as a result of a neuritic involvement of the cervical and brachial plexes. This involvement may be of both or only one, but since they are frequently associated, they will be considered together. If a brief résumé of the anatomy of these plexes will be permissible, we will gather a better understanding of this.

ANATOMY OF BRACHIAL AND CERVICAL NERVES

The brachial plexus is made up by the union of the four lower cervical and first dorsal nerves. The distribution of the upper dorsals is to the tissues over the heart and body walls. Parts of the first and second dorsals supply the upper inner surface of the arm and ulnar border of the forearm. The second, third, and fourth cervical nerves supply the skin of the occiput, neck and shoulders. The fourth cervical also descends to the front of the chest as low as the third rib, where it overlaps with the second dorsal. The second and third dorsals go to the inner half of the upper arm, axilla and chest, meeting and overlapping with the fourth cervical. The fourth and fifth dorsals go to the chest and the fifth goes as low as the upper part of the epigastrium. One branch of the brachial plexus, the communicating, completes the phrenic nerve which arises by three heads from the third, fourth and fifth cervical nerves, which in its distribution sends filaments to the pericardium and communicates with the plexus of the sympathetic in the abdomen.

PATHOLOGY OF NEURITIS

In addition to this brief statement of the anatomy, some mention of the types of neuritis and their pathology will be helpful. We recognize neuritis as an inflammation due to several possible causes, the chief being a local or systemic infection and trauma of various kinds. A focal infection is perhaps the chief factor in the average case and while this may be slow in its progress, it eventually will bring about a typical attack of neuritis. There are cases, however, that have all the earmarks of a neuritis from the viewpoint of pain, yet are not true cases. These are what we term perineuritis, wherein the inflammation is limited to the perineural tissues, pressure from the serous inflammatory exudate within the nerve sheath producing the exquisite pain. If the exudate is absorbed early without becoming organized, the attack will be short lived, but it becomes the site for future trouble, if the focus is not eliminated.

INTERSTITIAL AND PARENCHYMATOUS NEURITIS

The true neuritis is of two main types, interstitial and parenchymatous, the former involving the connective tissue of the nerve trunk and the latter the medullary substance and the axis cylinders. The interstitial is the more common of the two. Each may have the usual acute, subacute and chronic stages. These are more frequently the result of a systemic infection or disease, such as diabetes, malaria, alcoholism and lead poisoning.

With these facts in mind we can readily see how the pain of a brachial neuritis may affect the cervical nerves as well, and the pain reference may be to distal points of either or both distributions.

There is one type involving the occiput that has for one of its features a dull occipital headache. The point of pain is about the size of a silver quarter and is located at one side of the cervical spine, and is very sensitive to pressure, in fact, direct finger pressure will send a pain directly through the head, apparently. There may be with this a wry neck, painful with any motion of the head, and the soreness extending along the muscle course. If one palpates carefully he will find an area of infiltration that suggests lymphstasis, and this may extend throughout the whole side of the neck. The wry neck is not always present, and when it is, the involvement is usually more severe and of longer standing.

Unless one thinks of the nerve distribution here the tendency will be to consider it to be a myositis and treat it accordingly, using the drugs generally given for headache. If, however, the other thought is in mind, the static wave current will be used to test out the trouble and this will readily be found if the current is applied to the brachial plexus. My experience is that if applied to the area near the shoulder cap, the painful response will be greatest, with the other areas following in a lesser way. For the occipital pain, testing with a metal electrode is not so satisfactory, so I use the nonvacuum surface tube, the smaller the better, and test that way. Treatment is with the same current applied in the usual manner to the surface of the plexus, and the tube to the occiput, attached to the positive pole, just as is the metal electrode. After a few treatments the headache tendency will disappear. In many instances one treatment will take care of the occipital part and the headache will entirely disappear.

Another unsuspected type of referred pain from this plexus is that affecting the index finger of the

*Read by invitation before the New England Association of Physical Therapeutics, October 27, 1926.

mechanic. The middle finger may be likewise affected but usually the index is the principal one. This is more likely to occur in winter time when he is using cold tools, and then the pain is intense. One other feature of these cases is the anesthesia of the finger, a sort of paradox. When grasping a cold wrench, the patient will not feel it in his grasp, yet when attempting to use it the pain will come on with more or less intensity, and he has to give up the attempt. Inspection will show a blanching of the finger very much like a chilblain, yet in my cases there has been no such involvement. This I have learned from close questioning in each case. Local treatment of the finger will bring no satisfactory response, and in those cases that have been referred to me this has been tried out faithfully but in vain.

Testing the brachial plexus with the static wave current will demonstrate where its origin is and the treatment must be conducted in the same manner as for a brachial neuritis, except that in some cases we will have to follow down the nerve course instead of limiting the treatment to the shoulder area alone. Indirect sparks are always advisable, as the finger can in that way receive its full share of the current. The milder type of cases of this kind will need no other treatment than that directed to the brachial plexus.

The third type of involvement of this plexus is that in which the precordium is affected, simulating angina pectoris. This offers a diagnostic difficulty and suggests a grave involvement, therefore being the one type of referred pain that must receive particular attention. This has been the subject of former papers, with which fact many of you are cognizant, and I feel its importance should not be underestimated.

Since a full consideration of this phase of reflex pains may be had from my former papers, I will give this condition but brief mention here, notwithstanding its great importance.

Referring back to the nerve distribution we can see how a pain from a brachial neuritis may be referred to the area supplied by its branches, the cardiac area and the arm particularly, simulating a true angina. If we have in addition a myocardial insufficiency, the similarity becomes greater, and many a patient has had this diagnosis and its accompanying grave prognosis given him, all of which makes for ill health and despondency and all that accompanies such a prognosis.

When a patient consults the average physician with this type of pain with its symptoms so significant, a diagnosis is usually made upon the existence of the pain plus the cardiovascular findings, without a careful inquiry into other facts that may accompany these. There are certain features of a true angina that are absent in these cases, and this can only be elicited by a close cross examination, losing sight for the time being of the greater signs. The lack of hypertension, the pain not always being distinctive or always the same in its distribution, and the lack of the feeling of impending dissolution, etc., will help to eliminate the true type. Then with the suspicion of a neuritic involvement in mind, when the static wave current test is made, we have with the painful response a fair evidence of the neuritic condition. This may not always eliminate a true angina, for this may have an accompanying neuritis, thus being complicated, and it will be only after a sufficiently large number of treatments that a diagnosis can be made with any degree of certainty. If it is a pure neuritis, treatments for this condition will bring the response, but if a true angina, this will not be the case. In such cases where there is myocardial insufficiency, we must add the heart diathermy for muscle nutrition, and happily these cases have shown excellent results in my experience. Usually after a few treatments by the use of the wave current and sparks the pain has largely decreased and the patient's spirits have risen in proportion, so that it is surprising how quickly the case is turned from despondency into hopefulness.

Now leaving this fertile area we go to the sciatic reflexes, the main ones being painful but not of a grave nature. Backache, which is frequently the result of a sciatic neuritis, will not be considered here since it offers very little difficulty in diagnosis.

The one often unsuspected condition is painful knee joint. This is generally looked upon as arthritic in character and even in some cases without demonstrable pathology, this diagnosis has been made and insisted upon by competent men. This fact may be best illustrated by the citation of a case of the type under discussion.

A gentleman from your vicinity suffered for five years from what was diagnosed in turn by twenty good internists and surgeons to be a double arthritis, the diagnosis being made from the objective symptoms and in spite of negative x ray findings. He was under observation from three to four weeks in one of your city hospitals, having all kinds of examinations and tests made, the only thing found being one abscessed tooth which was extracted promptly. Everything else was negative, yet each physician in turn from one city and another gave the same diagnosis of arthritis. The five years of incapacity were spent in this form of search for relief, finally reaching one of our prominent Southern sanatoriums, and the physician there sent him to me. Here is where I had the advantage, for all necessary examinations had been made and I had the opportunity of making my diagnosis by exclusion, and it was quickly arrived at, for having had other cases of the type, the static wave current was tried at once with the most painful response possible. In fact the patient almost jumped out of the chair when the current was applied to the sciatic notches. Five weeks of sciatic treatment by the use of the wave current restored him to practically a normal state, and this without any applications to the knee joints. These were absolutely ignored, and here is the proof of what I am attempting to place before you for consideration. These cases do not need more than sciatic treatment, unless there is some local tenderness under the testing, and this testing is always desirable.

Leg cramp involving the calf muscles is another type of reflex pain. This comes on after getting warm in bed and is severely painful and not easily relieved by ordinary means at hand. Hot applications will sometimes give temporary relief, but any motion in bed will precipitate an attack.

Cases of this kind that have come to me often give the history of unsuccessful treatments applied to the involved area, sometimes by those physicians working along our lines, and sometimes by physicians in general practice. The fact that the sciatic origin is not

generally recognized makes it come under discussion here. I know of no exceptions to the statement that these are always sciatic in origin, for all of my cases have responded to treatment along this line, the usual static wave current and sparks. First, these cases are thus tested and the treatment follows in course.

The last type for consideration here is that of painful foot, the result of relaxed arches, not flat foot, which latter is an extension of the condition under discussion. In my experience a long standing case of sciatic neuritis will gradually affect the foot and leg muscles and tendons by an enervating influence, if it may be so termed. The nerve nutrition seems to be largely lost and as a result of the superimposed body weight the arch relaxes and temporarily drops while in the standing posture, and returns to its normal when sitting, the pain lessening then. The pain is referred mainly to the juncture of the metatarsophalangeal joints, but may extend to the heel. Sometimes the pain is similar to that from what is known as the Morton toe. One feature of these cases is the fact that the pain is relieved by keeping off the feet, sitting as much as possible when the attacks come on. Occasionally the pain runs up toward the knee but seldom above it. If the usual static wave current test is made to the sciatics, there will be the painful response which is an evidence of the involvement. Fortunately these cases usually respond well to treatment, particularly when the usual electrical measures are accompanied by proper foot exercises. There are some cases that require temporary assistance by the use of felt pads for support of the arch, but these are generally dropped after a time. It will be good practice always to test these foot cases by the method mentioned, for attention to the foot alone will not bring results, if the neuritis is left untreated.

Apologies must be offered for the sketchy manner of presentation of this paper, but the subject is too great for more than passing attention when so many types are given. Even with the lack of detail evidenced here, there is the hope that it will at least bring your attention with renewed interest to the class of cases so little understood by the profession.

Radiological Diagnosis of Secondary Jejunal Ulcers.—S. Gilbert Scott (*Lancet*, July 31, 1926) recommends the following technic when a case of suspected ulcer after gastroenterostomy is being examined:

The patient is instructed to swallow one mouthful only of an opaque barium cream. This is watched passing down the esophagus into the cardiac end of the stomach. It is then taken in charge by palpating hands on the abdomen; and being controlled by this means, the emulsion can be carefully maneuvred through the stoma. The business of the left hand is now to prevent, by gentle pressure, any of the meal passing further into the body of the stomach, for, if the pylorus is passed, shadows in the afferent limb of the jejunum will cause confusion. The business of the right hand is to dam up the emulsion in the first few inches of the efferent limb. This maneuvre is not always easy to accomplish. The opaque cream is now manipulated backwards and forwards through the stroma into the jejunum, and back again into the stomach. This whitewashing process will cause the opaque substance to adhere to any ulcer crater present, showing itself as a black fleck or spot which remains isolated after the displacement of the contents by pressure. This fleck, as in gastric ulcer, shows denser than the surrounding meal. The penetrating type of ulcer is more usual and is easier to detect, as a nipple or budlike projection on the jejunal wall. This will also remain filled after displacement of the contents. Pressure of the right hand is now released, allowing the contents to flow on into the remainder of the jejunum. Six inches from the stoma may be considered the limit of jejunal ulceration. The remainder of the meal is now swallowed and the rest of the stomach examined as a matter of routine.

The author has found that the majority of jejunal ulcers detected radiologically are in the angle formed by the greater curvature of the stomach and the efferent limb of the jejunum (the gastrojejunal angle). The closer the ulcer is to the anastomosis (gastrojejunal ulcer), the deeper it will lie in this angle. The true jejunal ulcer, usually of the penetrating type, is found as a rule projecting from the inner surface of the jejunum, well out of the gastrojejunal angle. Deep pressure in this angle will in many cases help to demonstrate an ulcer.

Those unaccustomed to this examination will at first experience difficulty in detecting an ulcer among the numerous projections and isolated flecks that will be seen in the neighborhood simulating ulcers, and the inexperienced are more apt to see ulcers that are not there than to miss the genuine lesion. The shadow cast by a full meal will mask or overlap the diagnostic features of ulceration, besides rendering full control of the contents difficult. In other words, the whitewashing process described will be almost impossible under this condition, and many small gastric ulcers are still being missed for the same reason. As in gastric work, radiographs alone are of little diagnostic value, most jejunal ulcers being extremely difficult to record on a radiograph, even after they have been located on the screen.

Under present conditions, radiologists should not give a diagnosis of an organic lesion of the intestinal tract unless it has been visualized on the screen—in other words, direct evidence must be forthcoming. The value of the examination is in no way lessened because a distinction between, for example, a simple and malignant ulcer cannot always be discriminated. The hand and eye properly trained are of greater diagnostic value than radiographs, and direct evidence of gastric lesions in nearly one hundred per cent. of cases is, the author believes, possible in the near future if this fundamental fact is but thoroughly grasped and recognized.

Carbon Arc Light in Pediatrics.—Herman Goodman (*Archives of Pediatrics*, August, 1926) remarks that little has been done with the carbon arc in the treatment of the cutaneous disorders of children. With carbon arc lamps, using the socalled white flame carbons or their equivalents, exposures of the child may be made for long periods; there is no danger of painful erythema and burns; the baby's eyes are protected and the child roams about in an open space for treatments as long as twenty minutes to two hours. The author has used this light in impetigo contagiosa, pityriasis rosea, ringworm of the glabrous skin, cutaneous tuberculosis, psoriasis and infantile eczema.

Historical Medicine

Ancient and Modern Lithotripsy.

LOUIS NAGORSKY, M. D.
New York

When civilized man first began the treatment of vesicle calculus, he sought the aid of chemistry, to relieve himself of this condition. Soon, however, he discovered that in order to get immediate relief, he must resort to instrumentation of some kind and so discarded this uncertain method of treatment.

The Egyptians were first to practise the extraction of stones through the natural passages. A description of such an operation by the Arabian physician Haly, for stone in the urinary bladder, was handed down by Proper Albinus. It is as follows: A pipe of ivory or wood of proper size was introduced into the urethra and air blown into the bladder. When the bladder was sufficiently distended, the proximal opening of the tube was tightly corked. With one finger in the rectum, the stone was forced into the vesicle neck.

This procedure was followed by suprapubic pressure and the cork suddenly removed. The force of the expelled air carried the stone along into the posterior urethra and with further dilatation of the anterior urethra the stone was removed. Of course, this applied to small stones. The larger ones were removed in another manner, presently to be described.

The operation of cystotomy is of higher antiquity than lithotripsy. During Hippocrates's time the success of the operation was exceedingly rare, and because of the high mortality this procedure had fallen into disrepute. The reason can readily be understood. Asepsis and modern methods of hemorrhage control were unknown and nearly every one succumbed who submitted to cystotomy.

Ammon of Alexandria employed a sculptor's chisel, when the stone was too large to be delivered through the perineum. He was noted for his great skill and so the term lithotmos or stone cutting was named after him.

During Hippocrates's time, all surgical procedures were considered hazardous and he supposed that all wounds of the urinary bladder were fatal. His reasons were not unfounded because nearly every patient died and he characterized the operation as cruel and murderous.

This induced him to add to his famous set of rules universally known as the "Hippocratic Oath," the paragraph which reads, "I will not cut persons laboring under the stone, but will leave that to be done by men who are practitioners of this work."

As a result of this cystotomy remained in the hands of the latrosurgeons for a long time after Hippocrates. The Greeks under Erros, Megas and others restored this operative procedure to some degree after it had been neglected by the schools. At this time Rome had no lithotomist since no one dared practise it.

Archagatus the first to propose to cut for stone was immediately banished and so cystotomy was not again performed until Celsus, who perfected the method which was used for centuries. So that during this long interval all attempts at extraction of stone through the natural passages were abandoned or forgotten.

Many years after Christianity was established the practice of medicine passed into the hands of the monks.

They would not permit any surgical operation which resulted in loss of blood and so all surgical procedures went under the maxim *Ecclesia Abhorret a Sanguine.*

As a result of this attitude on the part of the church, cystotomy fell into almost universal disuse.

Some time thereafter a group of practitioners known as the barber surgeons developed. These men were restricted in their activities to such operations as blood letting (venesection), removal of corns and other simple and harmless practices.

In the interim, the wretched sufferers from stone were condemned to everlasting misery and received such treatment as lithotriptics and divine saxifrages might offer and which gave no relief till death. Such was the status of surgery at this time.

It was not until the beginning of the sixteenth century that science received a new impulse. A group of lay professors also known as university doctors became numerous and every one began reviving this operation, which lay dormant for so many years.

In those ancient days as well as in our time the question of etiology of stone was as perplexing to the medicos as it is to us. Strange as it may seem, we in our very advanced stage of medical science of today have as little to offer in the way of explanation of the cause or causes, as our ancient colleagues. Their various theories advanced the suggestion that water, food, and other substances were responsible for the formation of stone in the bladder. Our theories are similar and yet we still flounder in the dark and are not positive as to what the true etiology of vesicle stone is.

Ever ready to jump from one method to another for the removal of stone, it sometimes happens that some lay person is inspired to introduce a treatment which often receives universal recognition. Fads of past centuries were just as numerous as present day fancies.

In the eighteenth century a new form of nonsurgical treatment developed in the use of socalled *dissolvements.* A certain Miss Stephens claimed positive cures by her secret method which was advertised as painless and harmless. Her cures were heralded afar with joy and everybody acclaimed her and the wonderful results obtained by her methods. The French government decorated her with a medal of honor and also awarded the sum of sixty thousand francs. No more operations, no more suffering. The enthusiasm became so great that lithotomy was barred.

Whenever mucus was found in the urine, it was thought to be dissolved stone. The treatment con-

sisted of drinking copious drafts of lime water and soap, which was supposed to dissolve the stones or prevent their formation.

Soon joy changed to sorrow and enthusiasm waned, because it was discovered that this sure cure was

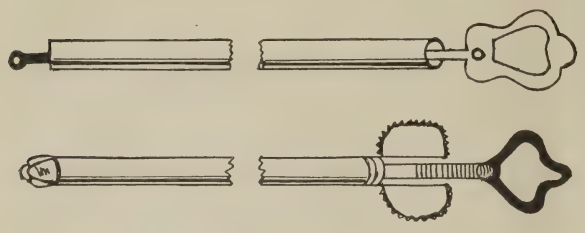


Fig. 1.—Eighteenth century lithotrite.

nothing else than a chimera and so it went the way of all other such procedures.

The introduction of the straight sound was known ages ago. These sounds were found in Herculaneum and are still to be seen in museums of antiquity.

In 1561 Franco devised a four branched instrument which he called the *quadrupulus vesicæ*. This instrument could grasp a stone the size of a hen's egg. The disadvantage of this instrument is appar-

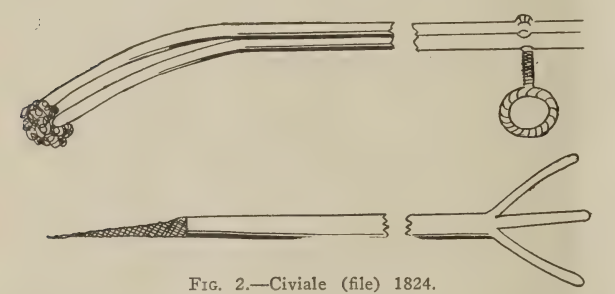


Fig. 2.—Civiale (file) 1824.

ent because it could be passed only through a large perineal incision.

A period of quiescence elapsed when the curved sound appeared. Daniel Episcapus left such an instrument.

Sanctorius, in the seventeenth century, extracted small calculi by means of an instrument he devised which consisted of a three branched forcep. The larger stones he crushed with a stilette.

A rectilinear sound was demonstrated in 1813 by one Dr. Gruithuisen of Munich.

In 1819 Mr. Elderton, of England, invented a curved thick sound. At the head of the instrument

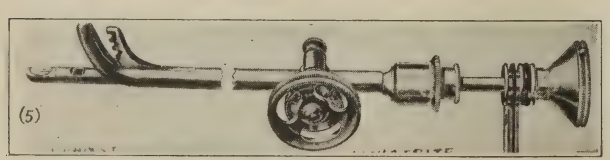
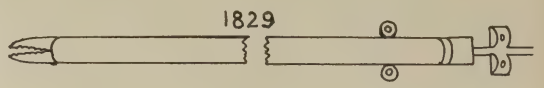


Fig. 5.—Lohnstein (Berlin) cystoscope lithotrite.

was attached a handle and the vesicle end contained two branches.

Sir Astley Cooper, the famous English surgeon, in 1821, reported a case of extraction of calculi. In this operation he used a common forceps, the size of a sound and curved similarly to a bullet forcep. The instrument was passed into the bladder and the operation performed this way. He succeeded in removing eight stones.

A French surgeon operated on a monk for stone in the bladder. He passed a funnel catheter into the bladder and through this a sharp chisel. By striking gently the outer end of the chisel small fragments were removed and washed out.



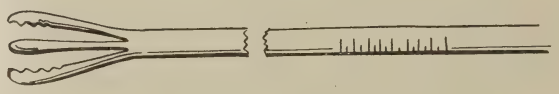


Fig. 3.—Vesicle stone measurer.

From the days of Civiale, the great French surgeon who devised the Triblade (1824) (an instrument consisting of a drill, a central axis and three claws) to the year 1878, little or no change in the operation was observed. In those days rapidity and skill were all essential. Operations were limited in time to three minutes to avoid cystitis. This was a complication to be dreaded and one of the important reasons for the slow development of the lithotrite. Weiss improved on the instrument and constructed what he called the Triblades; a crushing instrument. (Civiale's instrument was not a crushing instrument.)

It was left to Bigelow to revolutionize the whole system. His perfection of the instrument known as the Bigelow lithotrite and his evacuator enabled the surgeon to successfully remove all the crushed fragments of stone in one sitting. His improvement on the handle and lock and the change from a solid "female" arm or crushing end to a fenestrated one, completed a nearly perfect instrument.

This (Bigelow) lithotrite[1] has been in use for

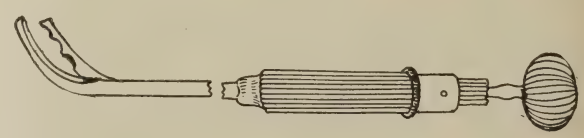


Fig. 4.—Bigelow lithotrite 1878.

many years and also has had its rise and fall like all other instruments. It served its purpose in chosen cases and in skilled hands was a very effective instrument. Its sole disadvantage was the fact that the operator had to work in the dark, so to speak. Withal, a dangerous instrument in the hands of the inexperienced and unskilled. The dangers were the possibility of penetrating the bladder wall or of tearing out a piece of bladder mucosa during the process of stone crushing.

In the hands of a skillful surgeon this operation, like all other operations requiring skill and expe-

[1]Chismore's improvement on the Bigelow lithotrite, consisted of a hollowed made blade. This permitted irrigation of the bladder, without removing the lithotrite.

rience, was devoid of many of its dangers. Care had to be observed in the introduction of the instrument through the urethra and into the bladder.

So with the passing of other obsolete instruments, the Bigelow lithotrite must join its everswelling ranks and make place for its latest rival, the cystoscope-lithotrite.

This consists of a lithotrite and cystoscope combined. The body of the lithotrite is tunnelled and permits of passage for the obturator. After the instrument is inserted into the bladder, the obturator is removed, the bladder filled with a solution of boric acid or any other antiseptic fluid, and the telescope substituted. This enables the operator to get a clear vision of the interior of the bladder and its contents. The stone is easily caught between the jaws of the lithotrite and crushed. No longer is it necessary to perform this operation in the dark, thanks to the genius of the inventor of the cystoscope-lithotrite.

This now brings to a close this rather hurried and superficial description of the history of the lithotrite. A more fascinating chapter of surgery does not exist and much credit should be bestowed upon the geniuses who were instrumental in developing the lithotrite to its present perfection; from a simple crude tube to the wonderful modern cystoscope-lithotrite.

Indications for the cystoscope-lithotrite included such patients who will not submit to an abdominal incision, such as suprapubic cystotomy calls for. Diabetes is another strong indication for lithotripsy. Stones not too large should be crushed by the cystoscope-lithotrite.

The advantages are many and important. Convalescence is short as the patient in many instances is enabled to attend to this business without loss of time and inconvenience. There are no wounds to heal and as stated above, recovery is rapid. Of great importance is the lack of danger from secondary hemorrhage.

Most important factor in this modern method of cystoscope-lithotripsy is that the whole operation is done under actual vision.

Of course, where the stone is very large, suprapubic cystotomy should be the choice of operation. Also in certain cases of middle lobe hypertrophy of the prostrate.

Local anesthesia with cocaine or novocaine in the urethra is all that is necessary in many cases. General anesthesia may be decided upon in neurotics or such patients as would prefer such anesthesia. The most common practise at present is sacral anesthesia.

Before introducing the lithotrite, a careful examination of the urethra should be made. If the meatus is too narrow a meatotomy is indicated.

If stricture of the urethra is dilatable stretching it up to the size of the instrument (lithotrite) should be done. Should the stricture be filiform in size and tortuous in character, all attempts at lithotripsy should be abandoned and a cystotomy done instead.

In former times the method of locating a stone in the bladder was very crude and was performed by introducing the stone finder and manipulating the instrument in the bladder until it struck the stone.

X ray does not always help because certain stones do not photograph. The most positive diagnostic means at our disposal is the cystoscope. At present, with the combination of both cystoscope and lithotrite, we have an instrument which is both diagnostic and surgical and offers a means of rendering the operation of stone crushing in the skilled operator's hands, simplified and yet complete. It has a decided and important place in the practice of surgery and should be used more often.

The operation of lithotripsy *per se,* barring a few remote accidents, like the fracture of the crushing end of the lithotrite (as was reported in a recent case with the use of the Bigelow lithotrite) is not a dangerous procedure, especially with the cystoscope-lithotrite, and judging from the experiences of others and myself is far more safe than cystotomy.

In conclusion, I wish to add a statement taken from a Study of Vesicle Calculus at the Mayo Clinic:

"Litholopaxy was performed in 153 cases (138 men and fifteen women) and suprapubic cystotomy in 395 cases (385 men and ten women). The mortality in litholopaxies was 1.3 per cent. and in cystotomies 8.7 per cent."

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1018 East 163rd Street.

Contributors to the Science of Medicine

John Radcliffe

While Radcliffe was stigmatized by his rivals as the physician without learning, and many were jealous of his success, and enraged by his rude ready wit, at least he was a common sense practitioner, and one of foresight. In the period in which he lived the custom of the profession was to bleed vigorously and persistently, and to drench their patients with slops, caudles, and diet drinks, in fact, to lower their powers of resistance by every possible means.

The methods of Radcliffe were rational. He eschewed the devitalizing measures in vogue and based his treatment mainly upon fresh air, personal hygiene, and by the administration of simple and therefore harmless remedies. Radcliffe was eminently a practical physician who relied chiefly upon experience in an age when empirical treatment

founded largely upon the writings of long dead physicians held full sway. He acknowledged Sydenham as his master and followed his precepts faithfully. His was not an original mind but one distinguished by strong good sense and natural sagacity. Radcliffe's chief claim to rank as a contributor to medical science rests upon his munificent gifts for the endowment and advancement of medical science during his life and his yet larger posthumous generosity for the same purpose. In this respect his liberality was unexampled and warrants fully his inclusion in the niche of fame as a great contributor to the progress of medical science.

John Radcliffe was born in 1650, his father possessing a moderate estate in Yorkshire. John did so well at school that he was sent to Oxford University at the age of fifteen. In spite of the sneers of his jealous contemporaries that "he had no learning" he was made senior scholar of his university college and in due time took the degree of B.A. and was made a fellow of Lincoln College. He became M.A. in 1672, it is said with uncommon applause. In the meantime he had been pursuing diligently the study of physic and attending the various courses of anatomy, chemistry and botany delivered in the university. In 1675 he became Bachelor of Medicine and immediately began to practise in Oxford with great success. He probably gained the complete confidence of the public by his judicious mode of treating smallpox, a method introduced by Sydenham ten years previously. It consisted in the employment of the cooling treatment, the practice of the time being to keep the patient in a hot close room from which all fresh air was rigidly excluded. Few of his contemporaries approved of the practice of Sydenham, the new method indeed had the sanction of John Locke, but for the most part the practitioners of the day continued to trudge along in the footsteps of their forefathers. Smallpox was raging in Oxford when Radcliffe was there and instead of confining his patients in a stifling room, as was done by other medical men, he employed this new method, exposing the sick to the free access of fresh air, giving them cooling emulsions and using other antiphlogistic remedies. This treatment was followed by immediate and remarkably beneficial results and set the seal upon Radcliffe's fame. Indeed, he had been practising only two years in Oxford when all the most prosperous families within reach of the city sought his medical aid.

In 1652 he took the degree of Doctor of Medicine. When thirty-four years old he moved to London and had not been there for more than a year before he rose to the head of his profession and received in daily fees the sum of twenty guineas, about $105, which would be worth now at least twice that amount.

Radcliffe was a man of good presence, endowed with great powers of conversation, and of a ready albeit coarse wit in keeping with the times. In 1656 he was appointed physician to Princess Anne of Denmark and was for some years a trusted adviser, but he lacked the courtier's compliancy and suavity. The Princess Anne, having brought on the condition termed by the vulgar "blue devils" from not paying proper attention to her diet, sent in all haste for the physician. Radcliffe, a *bon vivant,* when he received the royal command, was sitting over the bottle in a tavern, also a custom of the times. He was loath to leave the allurements of Bacchus and stayed on. A second messenger arrived but then Radcliffe was so greatly under the influence of the heady beverage that he allowed his "Dutch courage" to overcome his discretion, and refused to go. "Tell her Royal Highness," he shouted, banging the table with his fist, "that her distemper is nothing but the vapors. She's in as good a state of health as any woman breathing —only she can't make up her mind to believe it." He repented of his rashness when the fumes of liquor had been dissipated but Anne never forgave the sarcasm as to "the vapors" and Radcliffe was no longer her physician. This rupture with Princess Anne, however, made no difference to his popularity with the public and he continued to have the most lucrative practice in town.

When King William of Holland and his English wife, Mary, came to the throne they brought with them the Dutchman, Dr. Bidloo, as chief physician. But this did not injure the fame of Radcliffe. Bidloo, who was an able physician, in consequence of his comparative ignorance of the English language and of English constitutions created a certain amount of distrust. Radcliffe attended two of King William's Dutch favorites who recovered rapidly under his care and he became the King's physician. However, the King did not follow his physician's advice and Radcliffe was called in to see him. In reply to some questions, the King, showing his swollen ankles, which formed a striking contrast with the rest of his emaciated body, exclaimed, "Doctor, what think you of these?" "Why truly," said he, "I would not have your majesty's two legs for your three kingdoms." This illtimed jest had the same effect as his rudeness to the Princess Anne; it terminated his professional attendance at the Court of William. At the death of William, which took place shortly after this incident, an attempt was made to overcome the repugnance which was felt towards Radcliffe by Queen Anne but in vain; she replied to the inducements of her friends, that he would send her word again that her ailment was nothing but the vapors. Yet so much was his knowledge and ability respected that on the various occasions of the Queen's illness his advice was resorted to frequently, and he was rewarded most liberally for his opinions and prescriptions.

Radcliffe was a man at one time guilty of almost incredible meanness in money matters and at another time capable of munificence apparently on a scale beyond his wealth, and he also exhibited a stoical fortitude under any reverse of fortune that chanced to deprive him of some of his cherished lucre. His liberality to Oxford was by no means all of the post-mortem variety. In 1657 he presented the chapel of University College with an East window. Of the many instances of how his nature could "do good by stealth and blush to find it fame" his generosity to James Drake, a political writer as well as a physician, may be mentioned. Each of these men had tried their utmost to injure the reputation of the other. *But* when Drake, broken by political persecution, was sorely in need of money Radcliffe put fifty guineas— more than $250—into a lady's hand and begged her to convey it to Drake. "Let him," said Radcliffe, with the delicacy of a noble disposition, "by no means be told whence it comes. He is a gentleman, and has

often done his best to hurt me. He could, therefore, by no means brook the receipt of a benefit from a person whom he had used all possible means to make an enemy."

Radcliffe was sent for to attend the Queen in her last illness but was prevented from doing so by being confined to his house in the country owing to an attack of gout. The Queen died and so great was the faith in Radcliffe's skill that his absence from her sick bed was publicly regarded as the cause of her death, or rather it was believed that had he been present her life might have been saved. So strong was public sentiment in this direction that a member of Parliament, of which Radcliffe was also a member, went so far as to move four days after the Queen's death that Radcliffe should be summoned to attend in his place, in order to be censured for not waiting upon her in her extremity. The feeling against the doctor rose to such heights that a set of maniacs formed a scheme for his assassination. Fortunately, however, the plot was made known to him. His end was hastened by mental disquietude and he died on November 1, 1714, three months after the death of the Queen, according to his earliest biographer, "a victim to the ingratitude of a thankless world and the fury of the gout."

As a practitioner Radcliffe deserves the greatest praise and the gratitude of future generations. The violent measures of bleeding, and the administration of reducing medicines carried to an almost unbelievable extent in his day, he regarded with distrust in most cases and with horror in others. He, perhaps, was the brief factor in the abolition of this system. No doubt one reason why he deservedly gained so great a reputation was because his methods of treatment were not only more pleasant but were found by experience to be more effective by far than the methods prevailing. A good story is told of his rough and ready way of illustrating his disapproval of the kill or cure system and his hatred of Dr. Gibbons, nicknamed by him Nurse Gibbons, one of the most prominent exponents of the system. John Bancroft, a well known surgeon, had a son attacked with inflammation of the lungs. Gibbons was called in and prescribed, as was his wont, the most violent remedies, or rather the most virulent irritants. The child became rapidly worse, and Radcliffe was sent for. "I can do nothing, sir," he said, after visiting the patient, "for the poor little boy's preservation. He is killed to all intents and purposes. But if you have any thoughts of putting a stone over him I'll help you to an inscription." The offer was accepted, and over the child's grave, in Covent Garden churchyard, was placed a stone sculptured with a figure of a child laying one hand on his side and saying *"Hic dolor* (there is the pain) and pointing with the other hand to a death's head on which was engraved, *Ibi medicus* (there is the doctor)."

Numerous witty sayings originated with Radcliffe. It was the age of wits, among whom some of the doctors held their own; Arbuthnot, the wittiest of all medical men, Garth, Blackmore and Radcliffe even when pitted against such giants as Addison, Steele, Swift the terrible Dean of St. Patrick. Towards the conclusion of his life Radcliffe said that when a young practitioner "he possessed twenty remedies for every disease; and at the close of his career he found twenty diseases for which he had not one remedy." Despite this statement, which is probably true of every practitioner, his mode of practice at the outset, as far as is known, was the same as that which he used at the end of his career. Pure air, cleanliness and a wholesome diet were his main prescriptions. For the imaginary maladies of his hypochondriacal male and fanciful female patients he had the most supreme contempt, and neither respect for age or rank, nor consideration of interest could curb his bitter tongue when referring to such patients. The case of the Princess Anne is one in point.

At one time he lived in a house adjoining that of the great painter, Sir Godfrey Kneller. Sir Godfrey accorded Radcliffe the freedom of his lovely garden, which kindness was so abused by the servants of Radcliffe that the painter protested to their employer and threatened that if the annoyance continued that he would brick up the wall. "Tell Sir Godfrey," answered Radcliffe to the messenger, "that he may do what he likes to the door, so long as he doesn't paint it." When this vulgar jeer was reported to Kneller, he replied with equal good humor and more wit. "Go back and give my service to Dr. Radcliffe, and tell him I'll take anything from him—but physic."

Although Radcliffe had his foibles, eccentricities and vices, these were the vices of his station in life and the times; he was essentially a man and of independence and vision. As a contributor to medical science, he was a pioneer of the reform of an obsolete and harmful form of medical practice, one that was steeped in ignorance and fostered by tradition and convention. Radcliffe, at least, had rational views of practice and was a devoted follower of Sydenham, who did more than any one man to place treatment upon a sound foundation.

However, as said before, Radcliffe's chief claims to fame rest on his magnificently generous gifts for the advancement of medical science. By his will be left his Yorkshire estate to the Master and Fellows of University College, Oxford, in perpetuity in trust for the foundation of two traveling scholarships, the Radcliffe medical scholarships. To St. Bartholomew's Hospital he gave the yearly sum of £500 forever, towards mending their diet, and the further yearly sum of £100 for buying of linen; £5,000 for the enlargement of the building of University College, Oxford; £40,000 for the building of a library at Oxford; and when the library should be built £150 per annum to the librarian, and £100 per annum for buying books. After the payment of these bequests, and some legacies to various individuals mentioned in the will, he gave to his executors in trust all his estates in Buckinghamshire, Yorkshire, Northamptonshire and Surrey, to be devoted to such charitable purposes as they all in their discretion should think best. Besides the Radcliffe Library which was finished and opened in 1749, the observatory and public Infirmary at Oxford were built from these funds. In 1825 the trustees gave £2,000 towards building the College of Physicians in London and towards defraying the cost of erection of the Oxford Lunatic Asylum, opened in 1827.

Radcliffe's memorial is the splendid library and other buildings in Oxford which bear his name. It cannot be said that Radcliffe was not conspicuous in the advancement of medical science.

Editorial Articles

MAN AND THE SOIL

It is an axiom that those human beings who live under conditions the closest to nature are the most healthy. It does not follow, of course, that they are the most immune to disease, those who live in cities and in industrial centres become immunized to disease to a large extent, but the country dwellers who are the least civilized are comparatively free from those diseases which abound in urban districts and which are almost unknown among primitive people. The more primitive a people, the more robust their physical characteristics. Also, and this is the point upon which it is desired to place emphasis, that race which live on the produce of their own soil are more healthy than those who import their food. There is no doubt whatever, that artificial and canned foods are less nutritious than the fresh products of the soil and it, moreover, seems reasonable to suppose that food grown on the soil of the country or district in which an individual lives is best for him. The question of diet is all important and well to the fore in these days. It is recognized that overindulgence in food and drink brings about premature senescence, deterioration of the tissues, old age being as much a matter of worn tissues as of years, and premature senescence renders one prone to the attacks of disease. Therefore, frugality in eating and abstemiousness in drinking are important factors in keeping the tissues in good condition and warding off old age and disease.

In the book by Ettie Rout, recently published by William Heinemann, London, native diet is discussed. The author, who is a native of New Zealand and who lived there for many years, deals with the diet of the Maori, but her remarks apply with practically equal force to most native diets. In the introduction attention is directed to the fact that natives such as the ancient New Zealand Maori habitually took food for life and health, while civilized peoples frequently take food merely for amusement and enjoyment. With the Maori indeed food was medicine, and a large part of the diet was fresh green food.

The argument running through the book is that no nation can be really healthy and can endure for long unless, as a rule, it grows its own food supply. No nation has ever lasted which failed to conform with this primary essential of permanency of life. It is in truth a case of man and the soil. In mother's milk there is an elusive substance which makes of it the best food for the infant and the reason why so many babies are unhealthy and do not reach adult age robust and vigorous is because they have been denied their natural food of mother's milk. May not there be a something in the soil upon which a man is reared that like mother's milk renders food grown on that soil the most nutritious and invigorating for him? That too much stimulating and sophisticated foodstuff is eaten nowadays is undeniable. While in industry wealth may be found, in agriculture health will be found. Wealth without health is a mere irony, and the country which depends upon industry and neglects agriculture is doomed to decay individually and racially. Man and the soil are related so intimately that divorced from the soil and fed on canned and storage food and not on that fresh from the soil and grown in the soil he deteriorates inevitably and in course of time must yield the pride of place to the man who has been reared and brought up on natural food and the fruits of the soil.

A FORGOTTEN WORTHY

We are indebted to Dr. John E. Lane for introducing us to one of the illustrious forefathers of medicine with whom we, and we believe most other physicians, were not familiar. From medical history we learn humility and, at the same time, derive encouragement. We are humble before the prophets in medicine and what they accomplished and can rejoice over the improvement healthwise which has taken place since their days. Especially is this true in reading this painstaking and scholarly sketch of Robert Willan, for Willan was not only the "founder of dermatology in England" but one of the apostles of public health in that kingdom.

Willan lived from 1757 to 1812. Like not a few great men interested professionally in health and disease, he was of delicate constitution, but by great care achieved "an uninterrupted share of moderate health."

His rise in reputation seems to date from his appointment in 1783 as physician to the new Public Dispensary in Carey Street, London. He developed a clinical school in which kind of teaching he was eminently successful. He produced a classification of cutaneous diseases which was followed by most English physicians for a half century.

He made an historical study of smallpox which was considered "epoch making." His description of the "Characteristics and Effects of Perfect Vaccination" are said by Lane to be "models of vividness and lucidity that can hardly be improved on." He was outspoken on the importance of fresh air treatment and was equally bold in proclaiming the value

of bathing in all eruptive diseases including smallpox.

This leads to the public health view of the times which we gain from Willan's writings. He said:

"By a strange thoughtlessness, most men resident in London, and very many ladies, though accustomed to wash their hands and faces daily neglect washing their bodies from year to year. Hence the perspiration, condensed on the skin, gradually obstructs the exhalant pores, thereby producing various internal complaints, and an universal itching over the surface of the body, to which some delicate sufferers reconcile themselves, by supposing a scorbutic disposition communicated from their progenitors, without any fault of their own. Itching eruptions on the skin, often denominated Scurvy, or the English Malady, will never be eradicated until bathing or washing in warm water becomes general. The introduction of it, however, is not likely to be the work of physicians or philosophers alone. They must first influence the leaders of fashion. Let some of our nobility erect baths . . . in their spacious mansions, and, by setting an example, induce others to make the practice of bathing habitual. The custom would soon be adopted in every part of the metropolis."

With regard to vaccination he wrote to Jenner in 1806:

"Time and experience now allow me to draw the following conclusion from the history of Vaccination in our own country—that wherever it has been much practised, there the Small-pox is least seen among the inhabitants, and wherever it has been universally practised, there it is not seen at all, and if brought by accident, that it does not spread. . . ."

Referring to chlorosis he wrote:

"Young females are often affected with it, who follow a sedentary occupation in close streets, or narrow, crowded tenements, and seldom enjoy the benefit of fresh air. The disorder is not, however, confined to this class of people. We cannot be surprised that young ladies of the highest rank should suffer equally; eight months of the year they sit on thick carpets in close rooms heated by register stoves; have large fires kept in their bedrooms, never stir out except in carriages, and are often too much restricted in their diet. The weakness and extreme irritability induced by this mode of living not only brings on the chlorotic state, but after the slightest exposure to damp, or cold air, renders them also liable to be affected with pains and inflammations of the bowels, rheumatism, head-ache, catarrh, phthisis, etc., more especially as in the article of dress at that period of life, health is always sacrificed to fashion."

Lane concludes: "Willan was one of the important founders of modern medical science. In the words of Chaplin: 'We owe to the physicians of the age of George III an immense debt for the excellent foundations they built, often with rough and improvised tools. Men of the stamp of Hunter, Baillie, Prout, and Willan flung open the portals of medical science, through which their descendants have passed to realms of spacious and accurate knowledge.' Willan shared the physician's fate. The memory of the man himself was soon lost. For the conscientious physician, 'The reward of a thing well done is to have done it. The fruit of a good service is the service itself.' Willan earned this reward. In addition to this an unknown contemporary said of him that he 'left engraven on the hearts of a chosen circle, praise far more valuable than monuments of marble.'"

Those who will be interested to read the fine essay in full will find it in the *Archives of Dermatology and Syphilology* for June, 1926.

THE RISING TIDE OF DEGENERACY

According to Albert Edward Wiggam, whose *Fruit of the Family Tree* has made his name favorably known to all interested in eugenics, the blood of the nation is flowing in the wrong direction, which means, if continued, its ultimate downfall. "It is flowing from the country, man's natural habitat and breeding ground, into the cities, where the fires of luxury and ambition consume the nation's cradles; it is flowing from the common and subcommon to the supercommon classes, where again its precious leaven is licked up by the same devouring flames." . . . "In addition, charity, hygiene, sanitation and the triumphs of chemical, biological and medical genius have preserved for reproduction great numbers of incompetents and defectives who in the good old days of natural selection would have died young. Civilization is thus seen to be a selfdestructive enterprise, the most dangerous enterprise upon which mortals ever set out, and one which, by its very nature and objective, sets going those agencies which in the end destroy the men that built it and insures its own destruction."

But Mr. Wiggam is not so hopeless as his introduction would indicate, for there is a way out he thinks, and that is intelligent eugenics. He quotes abundant proof of the transmission of hereditary traits and the ill effect that heredity now exerts in increasing crime and delinquency. He urges the need of an intelligent choice of marital partners and believes there has been a material awakening on the part of the intelligentsia, at least, to this need.

This alone, however, will not effect the salvation of the race. We must not alone promote the propagation of the intelligent and the moral classes—and he finds that intelligence and morality go hand in hand—but we must curb the propagation of the imbeciles, the weaklings, the degenerates, and the criminal. He urges the further extension of the practice of sterilizing imbeciles and morons. Many will be surprised to learn that there are twenty-two states which now have sterilization laws which are rapidly being made effective. . . . Up to 1926 California had sterilized 4,500; Kansas, 335; Nebraska, 260; Oregon, 313; Wisconsin, 144; Indiana, about 700;

Michigan, about 100. "But the high birth rate among the poor is objectionable aside from the question of heredity because it increases the number of the poor. The way out of this is, he thinks, the spread of the knowledge of birth control." So far any knowledge of birth regulation has been the possession exclusively of the educated and the well to do. But when it becomes a matter of common knowledge, when moron and genius, pauper and prince can alike determine whether they will have one child, or none, or half a dozen, the question of all questions in both our national and our racial fortunes will be, who is going to assume the burden of parenthood? He hopes that the more intelligent and well to do will.

THE INDIAN MEDICINE MAN MUST GO

Dr. Hubert Work, Secretary of the Interior and former president of the American Medical Association, contributes to *The American Review of Reviews* an interesting study of the Indian medicine man. It seems that these charlatans still have a large following among the Indians and are responsible for much of the friction between the United States officials and the Indians. It will be remembered that Sitting Bull, the Sioux chief who was responsible for the Custer disaster, was a medicine man, a large part of his power as a leader being due to that fact. Dr. Work quotes the following from a report submitted by a physician of the Indian Medical Service stationed in Arizona:

"Get rid of the medicine men and the Indian Office will make more progress in one year than it has heretofore made in any ten years. This would be as true of many other tribes as it is of the tribes under this jurisdiction.

"The Indians have a strong natural inclination and desire to cling to their old habits and customs. This being true, it is reasonable to suppose that so long as they have leaders of their own race who also believe in holding to the things of the past, to whom they may look for advice and counsel, they will be hindered in their progress. It is impossible to serve two masters. They cannot follow their superstitious and backward leaders and make progress under the Government program of education at the same time. The Government can never gain their full confidence so long as their mentality is subjected to the retarding influence of the medicine men.

"The medicine man thrives on ignorance and superstition; consequently, he does all in his power to keep the people from patronizing the Service physicians. He threatens to haunt them and bewitch them, and he sends out his vassals to warn them of the dire disasters to be visited upon them if they fail to render him obedience and homage and do not cease taking up the white man's ways. This makes the successful practice of scientific medicine most difficult among Indians.

Dr. Work holds that Congress, which now prescribes qualifications for the Service physicians, should also insist upon such qualifications for Indian doctors as would at least prevent their contributing to the death of their patients.

GOITRE AND PHYSICAL DEVELOPMENT

The whys and wherefores of endemic goitre are by no means as easily answered as one might suppose and some of our conclusive guesses from small knowledge are not confirmed by investigation.

We mentioned in these pages recently the negative results of a study of the effects of goitre on the intelligence of school children in the schools of Cincinnati made by the Public Health Service. A study of the relation of goitre to physical development was carried on also in the Cincinnati schools and is just made public. Considering the supposed influence of the thyroid upon normal growth, one would expect to find evidence of this where goitre is considered relatively frequent. The comparison of the measurements of children in the Cincinnati schools with and without goitre (or apparent evidence of goitre) seems to prove that better nutrition and posture are slightly more frequent among thyroid-normal boys and girls. There was little difference in height between thyroid-normal and thyroid-enlarged boys, but the height of girls with normal thyroid was greater. However, the average sitting height was consistently greater among both boys and girls with thyroid enlargement. The average weights of both the boys and girls with normal glands was greater. Underweight was more frequent among those with thyroid enlargement.

The investigators conclude: "Whether the results of this examination of a relatively small number of children indicate a constant, uniform, and significant difference in physical measurements of normal and thyroid-enlarged persons can be ascertained only by further and more extensive investigations of similar character. Certainly the findings are suggestive and indicate the need for maintaining a normal thyroid gland lest a retarding influence be exerted upon physical growth."

With regard to the cause of goitre it has been pointed out lately that even in regions of Switzerland where cretinism is frequent, a large proportion of the inhabitants not only escape this condition but have apparently normal thyroids and a hereditary factor would seem to enter into the problem of etiology. Certainly there would seem to be some factor at work other than lack of iodine, or, in some regions of our own country goitre would not be confined to a certain percentage but would exist in the whole of the population.

It has already been pointed out in these pages that goitre or what is said to be goitre, is being found to be comparatively frequent in communities near the seashore. There is much still to be learned about this subject.

THE OLD PERSON

With unusual foresight there has been of late some special consideration given to the needs of health preservation of the elderly person, as though human kind were living to a more advanced age and were, hence, in need of such specialized medical attention. We hear much these days about the lengthening of the span of life, but, while it is true that more people live longer than formerly, the maximum years of the individual are not greater, even if a few more persons do attain to three score and ten years or so. We do not need to prepare to preserve centenarians, though it is well if we can make the later years of the many who now attain anywhere on the postmeridian side of life, happier.

It is difficult to define old age. As we have physiological and chronological age in the young, so we have physiological and chronological age in the elderly. Every clinician has been struck with the advanced physiological age of persons hardly more than fifty, and equally surprised at the bodily preservation of those of seventy or more years. Heredity doubtless sets its limits of tissue health and longevity, while, on the one hand, hardship and bad habits join hands to destroy and, on the other, ease and temperature tend to preserve, and to prolong life.

When one examines the statistics of any industry or profession he is struck with the rapid decline of the number of persons employed in the heavier occupations for the decade beyond fifty, and there is no doubt that the use of labor saving machinery is one of the factors tending to prolong existence. Doubtless the stress and strain of heavy toil told especially on the circulatory system, both on vessels and heart, and death from these causes cut short a larger percentage of lives before they had attained to what would now be called old age. In the good old days when men burdened their circulatory and excretory organs with heavy drinking and as heavy eating, sixty was considered a quite advanced age.

One may be as old as his arteries, for arterial degeneration certainly makes living a precarious business. Experiments on cadavers show that the arteries of the brain will stand four times the normal pressure, provided they are healthy, and with health there should be no premature passing away from apoplexy. Superfluous feeding and arterial degeneration seem to go hand in hand, but feeding is often the chief pleasure of the aged. A reduction of food becomes a matter of swapping minutes or hours of pleasure for days or years of mere stupid existence, and many would prefer the former.

Feeding is not so much the end of existence where there is some other end, and it is exceedingly important that the elderly person should not be cut off prematurely from work and from absorption in varied interests outside himself. The decline of many men who have retired from business needs but mentioning.

With decrease in neuromuscular activity goes decline in activity of the intestinal tract and it comes to be one of the services of the physician to stimulate this function. Fortunately there are drugs which help in this direction over a period of years without apparent injury.

For "busy work" reading was, until lately, about the only solace of the aged, and it is important that everything should be done to give him the best vision possible. The radio has been a godsend to the elderly with impaired vision and cannot be too highly recommended as an agency conducive both to longevity and enjoyment of life.

The automobile is another help to the old, by not only furnishing harmless exercise but by giving added interest to life and by affording exposure to air and sun. Such agencies go farther than all the drugs of the pharmacopœia in maintaining health and prolonging life and the physician should have them in mind, for often they do not occur to thoughtless, though anxious, younger relatives. Even the crossword puzzle has been good medicine for many elderly persons.

In case of evident weakness or illness, examination of the elderly cannot be too careful, for they are singularly unreactive. As an instance a case was recently reported of a total right pneumonia found at autopsy in an elderly woman who had not complained of symptoms. If examination in the aged should be careful it should also not be wearisome, for even in younger persons too much examination has been the last straw in the balance on the side of fatal termination. Professional interest (or even "science" —whatever that happens to mean) should not stand before the welfare of the patient, young or old.

Obituary

ROBERT F. McGINNESS, M.D.

Brooklyn

Dr. Robert F. McGinness died of heart disease at his home on Jefferson Avenue, Brooklyn, on October 24th at the age of fifty-four. He was a native of New York City and received his medical degree from the University of Baltimore in 1898. He has been in practice in Brooklyn ever since 1899.

Royal Victoria Hospital, Montreal

Annual Clinical Congress of American College of Surgeons

(*Concluded from page* 651)

As noted in the previous issue Macewen and his great immediate predecessors in office were important factors in the development of the Glasgow school. Professor Young is admirably competent to tell of the Glasgow School of Surgery and of one of its great makers, at any rate, as he was Macewen's assistant for many years and his successor as Regius Professor of Surgery.

Before proceeding with the subject he knew so well Professor Young paid sincere and humble tribute to John B. Murphy as one of the pioneer surgeons of the world and acknowledging that to his researches are due some of the greatest beneficent revolutions in surgery ever witnessed. However, he only knew of the work of Murphy and had never known or even met the man, he therefore acted wisely in selecting for his theme a wonderful surgeon whom he knew as intimately, perhaps, as any one knew Macewen as he was a Scotsman of an inviolable habit of reserve, the inner man was seldom disclosed.

The School of Surgery of Glasgow dates back to 1598 when the famous Maister Peter Lowe returned from France to his native Glasgow, he like Ambroise Paré, but no doubt for different reasons, having escaped the perils of the Massacre of St. Batholomew and obtained after four years' endeavor the charter for the Faculty of Surgeons of Glasgow. The Regius Chair of Surgery of Glasgow University was instituted in 1815, and Professor Young gave biographical sketches of the five professors who had occupied the chair previously to himself. Of these James A. Lawrie held office from 1850 to 1859 and was responsible for a great advance in cranial surgery. Glasgow still remembers him with pride. Joseph Lister was appointed to the chair in 1860, and held it until 1869, and of him Dr. Young said, "What I may be permitted to call the Lister tradition is more than sufficient to render the Regius Chair of Surgery in the University of Glasgow illustrious for ever. Viewing surgery as a science he was probably the greatest surgeon of all time and one of the memories which I cherish is that of shaking hands with the immortal Lister on the one occasion when I saw him and Sir William Macewen was the fifth Regius Professor was appointed in 1892 and held office until his death in 1924. Macewen was described by the speaker as a man of quite extraordinary energy finding or making time in his busy life to write more than seventy treatises and books. According to Young, Macewen's genius seems to have been founded on a cultivated ability and determination to carry on everlastingly in his labor for surgery and surgical pathology. Further, he had a faculty for taking full value out of every part of his work, no matter in what line his energies were employed for the time. There always seemed to present themselves some problems on which he could exercise his active brain.

Macewen, said Young, was a selfconfident, self-

sufficient man, who was somewhat distrustful and skeptical of views which he had not thoroughly analyzed himself. He cultivated in himself and advocated for his students the spirit of philosophic doubt, thus prompting many questions and keeping the teacher forever on the alert. Three special aspects of his great life work were his share in the development of modern aseptic surgery, his work upon bone and his pioneer work upon the surgery of the brain and spinal cord.

Dr. M. T. McEarchen, Chicago; Dr. Bowman C. Crowell, Philadelphia; Dr. W. W. Chipman, Montreal; Dr. Franklin H. Martin, Chicago; A. D. Ballou, Chicago; Dr. Allan Craig, Chicago, Officials of the Congress.

As to the question whether Macewen or Horsley was the actual pioneer of modern brain surgery, it had not been decided, Young pointed out, that that honor is due to Macewen, but as he further justly stated that both were prompted in this direction by the investigations of Hughlings Jackson and others. Macewen's classic work on *Pyogenic Diseases of the Brain and Spinal Cord* was published in 1893 and still remains a standard work.

In closing his address Dr. Young told the audience that the inaugural memorial Macewen Lecture will be delivered next year by Dr. Harvey Cushing, of Harvard University Medical School, and he also said that Macewen had many offers from universities and medical schools in the New World and especially from Johns Hopkins. But he felt that he had work to do which would be interrupted by a chance and he felt that this was of greater importance than his own personal interest. The lectures the first of which will be given by Professor Harvey Cushing form part of the scheme provided for by a Macewen memorial fund, another object of which is to erect a fitting monument in his memory.

Dr. Malcolm McEarchen, Associate Director of American College of Surgeons, and Dr. Rudolph Matas, New Orleans, Retiring President of American College of Surgeons.

At the evening meeting, October 26th, the program was highly interesting and the papers read came quite up to the lofty expectations raised. The speakers included Professor R. Alessandri, of Rome, Italy; Dr. William J. Mayo, of Rochester, Minn.; W. Sampson Handley, London, England; Dr. L. L. McArthur, Chicago; Dr. John G. MacKenty, New York; Dr. V. P. Blair, St. Louis; and Dr. Robert B. Greenough, Boston. Before giving a résumé of the papers read it will be in place to make a few remarks concerning Professor Alessandri, who was perhaps the outstanding figure and the most arresting personality of the meeting. Dr. Alessandri is a conspicuous figure physically as he is a tall man of magnificent physique. He is also a great surgeon, whose paper was on the whole perhaps the most original contribution to the literature of the meeting. Dr. Alessandri was the surgeon who was standing by the side of Mussolini when the Duce was shot last year by the Hon. Violet Gibson. Professor Alessandri, who as said before is the personal medical attendant of the Fascist leader, not only dressed the wound in the Italian dictator's nose, but had a narrow escape himself. The bullet which injured Mussolini's nose grazed the surgeon's hand. It may be recalled that Mussolini shortly before being shot had delivered an address of welcome to a great congress of surgeons assembled in Rome.

The subject on which Professor Alessandri spoke at the meeting of the Clinical Congress was that of thyroid and parathyroid bone tumors without primary lesion of the thyroid gland.

The point of his address to which especial attention may be directed is that cases have been reported of secondary growths in bones where the lesion was not to be considered either clinically or anatomically as real thyroid neoplasm but where all the characteristics led to simple colloid or hyperplastic goitre. He went on to say, "So many authors have denied the existence of benign metastasizing goitres and have held that the presence of metastasis is a sure proof of the malignancy of the primary tumor. Surely most of the referred cases are of this type, but in my opinion it is not possible to explain in this way every case and I think that the question is not yet solved. There are indeed cases where no change in the thyroid gland is present. In these the exclusive

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explanation of a steady reference to a malignant primary tumor of the thyroid gland cannot be accepted naturally if we can also exclude a tumor in accessory thyroids." The speaker showed on the screen cases on which he had operated and which came within this category. He therefore deduced that it must be admitted that bone tumors of thyroid or parathyroid type can be found without any primary lesion of the normal thyroid gland or of an accessory one.

Dr. William J. Mayo then gave an address on the cancer problem. Dr. Mayo is a model to be followed by all speakers on medical or surgical questions. He is open minded, concise, coherent and logical. In this address he marshalled in clear sequence all the salient facts of the cancer problem and confessed that ignorance as to the cause of malignant disease is almost as dense as ever. He thought that a foreign organism as the cause of cancer had not been convincingly demonstrated. Dr. Mayo discussed the subject from the biochemical aspect and said, as Adami also said, that efforts directed to its prevention were the most important phase of the problem. Estimating that ten per cent. of the deaths of persons in middle and later life were due to cancer why had not the other ninety per cent. of the population at similar age periods developed the disease? Was freedom due to accident, or did those who escaped the disease possess superior immunity to its cause or causes?

Science had been able to develop soil changes in smallpox, diphtheria, and tetanus. Why not in cancer? Because of natural immunity to the disease only a small proportion of the total population were susceptible to scarlet fever. With Dick's serum the degree of natural immunity of the individual to scarlet fever could be determined, and if it was not sufficient to protect from the disease, it could be increased to normal by serum. Why not in cancer? The development of carcinoma as well as its degree of malignancy might be attributable to the diminished activity of immunizing processes rather than to the nature of the activating agent.

Mr. W. Sampson Handley, of London, England, in discussing the progress in the treatment of breast cancer declared that in the majority of cases the patient could be cured. Operations in his hands had been successful in eighty-nine per cent. of cases and of these forty-five per cent. had remained well at the end of a three to six year period. The speaker showed on the screen his mode of using radium in the treatment of breast cancer and the positions in which the radium tubes should be placed in relation to the growth. He concluded by expressing the belief that as cases were brought under treatment earlier in their development, the prophylactic treatment of breast cancer by means of radium would become more generally successful.

Dr. Vilray P. Blair, of St. Louis, gave an address on cancer of the jaws treated by radium, diathermy and cautery. His motto in the treatment of cancer is that it must be treated like a skunk, either killed or left alone. "Forget the jaw and remember the cancer" was another of his slogans.

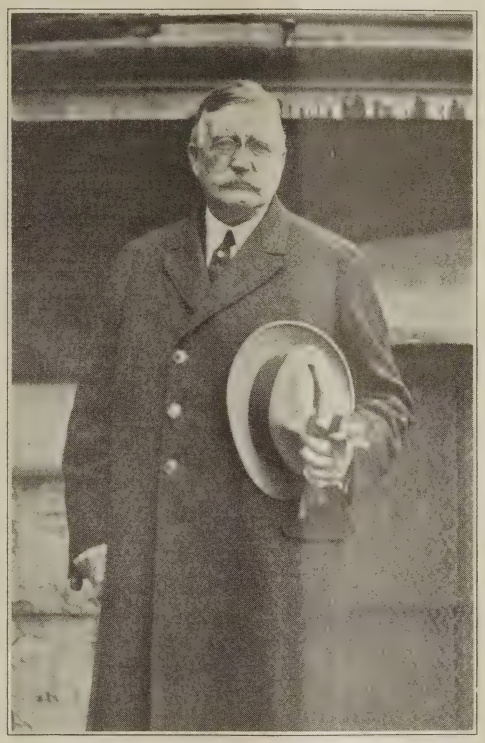
Dr. Lewis L. McArthur, of Chicago, dealing with cancer of the tongue, made some very timely warnings. He urged physicians and dentists to obtain at once competent investigation of tongue sores, which in a number of cases might be found to house cancer, and made a strong appeal to the public in general to take to heart the pleas made for early diagnosis in all cases. He stated that in his own experience seventy-six cases of cancer had been overlooked, sixty-seven of them by physicians and the remaining nine by dentists. He insisted on the advantages of early treatment, pointing out that within the first

thirty days at any rate the infection seemed to be localized.

Dr. John E. MacKenty, of New York, advocated the use of surgery in the treatment of cancer of the larynx coupled with early diagnosis. He explained at length the differential diagnosis of cancer of the larynx and drove home his verbal descriptions by lantern slides illustrating the differences in throat growths between cancer cases and other conditions which resembled them somewhat closely. He declared that when we have the public educated to recognize chronic hoarseness as a danger signal we shall have made progress. He held that radium had failed in the treatment of throat cancer in ninety-six per cent. of the cases and he proceeded to say that it was time that more of the truth about radium was told. Dr. MacKenty showed lantern slides of an artificial larynx he had invented, to be used in cases of total removal of the larynx.

Dr. Robert B. Greenough, of Boston, read a summary report of the Committee on the Treatment of Malignant Diseases with Radium and X Ray. He said that this report showed as good results as the former report going to prove that this means of treatment was standing well the test of time.

On the evening of October 27th Dr. Evarts A. Graham, of St. Louis, described the method devised by him for detecting lesions in the gallbladder. Dr. Graham's method is now known and employed in all parts of the world. He read a paper on the subject at the last meeting of the British Medical Association. It is largely based upon the introduction of a certain dye into the blood which was at once secreted by the liver and thence found its way to the gallbladder and making that organ very plainly visible by means of x ray photographs. This method had proved so successful in the diagnosis of gallstones that subsequent operations were said to have been successful in ninety-eight per cent. of the cases.



Dr. George D. Stewart, New York, president-elect of the Congress

Skin grafting and plastic surgery were the next subjects for consideration. The papers read were devoted mainly to details of lesions and sutures and were rendered more easily intelligible by a large number of illustrative photographs showing conditions before and after treatment. In discussing plastic surgery of the face Dr. Gordon B. New, of Rochester, Minn., pointed out that the cosmetic as well as the functional results must be considered. He insisted that while there were certain definite purely cosmetic operations justifiable there should be a clear understanding between surgeon and patient as to just what was to be done.

In discussing Dr. New's paper, Dr. Fulton Risdon, of Toronto, spoke in glowing terms of the work that had been done during the past ten years in this direction to attempt to make individuals fit to face the battle of life socially and physically. He pointed out that great strides had been made in plastic surgery during the war, but that, unfortunately, much of the wonderful grafting achieved then had proved unsatisfactory, and that considerable changes had been made in the methods used. Dr. New and other surgeons who had conducted research along this line had been doing work which was of great value to mankind.

At the same session Dr. John Staige Davis, of Baltimore, read a paper on transplantation of skin; Dr. Sumner L. Roch and Dr. Allen B. Kanavel, of Chicago, one on Dupuytren's contracture; Dr. Arthur Steindler, Iowa City, one on restoration of function by orthopedic operation; Dr. Henry H. M. Lyle, of New York, one on prevention of loss of function in the hand by the early use of skin plastics, and Dr. Sterling Bunnell, of San Francisco, one on restoration of tendons and nerves.

On Thursday morning in the Windsor Hotel clinical demonstrations were held on the surgery of the ear, nose and throat. Among the most interesting subjects dealt with in this section, because it is the newest, was that of the injection of lipoidol in the diagnosis of pulmonary lesions.

Dr. Samuel Iglauer, of Cincinnati, read the paper and it was discussed by Dr. David Ballon and Dr. G. E. Hodge, of Montreal. Of the clinical demonstrations given that of the use of lipoidol in the diagnosis of pulmonary lesions, as said before, was of the greatest interest because of the comparative novelty of the mode of employing lipoidol for this purpose. Dr. David Ballon, of Montreal, is the pioneer in using bronchoscopic injections of lipoidol which in conjunction with x ray give direct vision in contradistinction to the other methods of employing the substance for diagnosis of pulmonary conditions. Dr. Archibald, chief surgeon to the Royal Victoria Hospital, Montreal, and professor of surgery at McGill University, was one of the first to perform radical operations for the relief of certain pulmonary conditions and he has found that diagnosis of obscure lung lesions are rendered easier and more certain by far by employing the bronchoscopic method of injecting lipoidol followed by x ray examination. In some cases certain lung conditions are said to be impossible of detection except by this method. On Tuesday morning at the section of general surgery, gynecology, obstetrics, urology and orthopedics, Dr. Edward Archibald and Dr. David Ballon gave a demonstration of lung mapping by injection of lipoidol in the

diagnosis of pulmonary conditions. At the Pathological Institute of the Royal Victoria Hospital Dr. David Ballon gave two demonstrations on the use of lipoidol in pulmonary diagnosis by the bronchoscopic method, the first of these was a lantern demonstration and the second a demonstration on a living subject.

On the evening of October 28th Professor John M. C. Fraser, of Edinburgh, gave an address on the involuntary nervous system in relation to abdominal disease and Professor L. E. Barnett, of Dunedin, New Zealand, one on recent advances in our knowledge of hydatid disease. These addresses were followed by a symposium on sterility in men and women in which Dr. Edward L. Keyes, of New York; Dr. Robert I. Frank, of New York, and Dr. John Osborn Polak, of Brooklyn, took part.

At the afternoon session on October 29th, at the meeting of the Section on General Surgery, Gynecology, Obstetrics, Urology and Orthopedics, a fracture symposium was held, the chairman of which was Dr. Charles Scudder, of Boston. Dr. Nathaniel Allison, of Boston, dealt with the keeping of records and the securing of results in fracture cases. Dr. Joseph A. Blake, of New York, dealt with the principles of fracture treatment. Dr. Robert S. Osgood, of Boston, spoke on compression fracture of the spine. Dr. Kellogg Speed, of Chicago, with the treatment of the common fractures of the carpus. Dr. Paul U. Magunson, of Chicago, with the treatment of certain fractures of both bones of the forearm. Dr. Frederick J. Cotton, of Boston, with the reduction and artificial impaction of fractures of the neck of the femur. Dr. William O'Neill Sherman, of Pittsburgh, with fracture of the shaft of the femur, its treatment and results. Dr. Astley P. C. Ashhurst, of Philadelphia, with the same condition. Dr. Oscar F. Mercier, of the Notre Dame Hospital, dealt with temporary metallic osteosynthesis in the treatment of fractures, technic and instrumentation. Dr. C. B. Keenan, of Montreal, on recognition of dislocation of the os calcis in fracture of this bone.

Dr. Fred J. Tees and assistants, Montreal, gave a practical demonstration of application of Thomas splint.

The evening of October 29th was convocation evening, when the Fellowship of the College was bestowed upon 470 practitioners drawn from eight different lands. It was an impressive spectacle. The front half of the hall was given up to the 470 newly admitted Fellows who, arrayed in their black and scarlet Fellowship gowns, their heads covered by black mortar boards with scarlet tassels, trooped in. One was struck with the vigorous physical aspects of the men, some indeed were giants in stature and build, with few exceptions, while all appeared fine specimens of manhood. It is probable that in no civilized country would be found a like number of men of more imposing physical appearance. The proceedings opened promptly at eight p. m., when the officers, regents and guests of honor marched to the accompaniment of martial music, headed by the army officer bearing the great mace through the packed hall to the platform. The British National Anthem was then played after which the very Reverend Arthur Charles Carlisle, Dean of Montreal, delivered the invocation.

Honorary Fellowships were then conferred on Professor R. Alessandri, of Rome; Dr. Archibald Young, of Glasgow; Mr. W. Sampson Handley, London, England; Sir Ewen Maclean, Cardiff, Wales; Professor L. G. Barnett, Dunedin, New Zealand; Professor John Fraser, Edinburgh, Scotland; and Professor G. D. Wilkie, Edinburgh, Scotland, each of these was introduced individually by a member of the Board of Regents of the College who proclaimed the titles, degrees, qualifications of the person thus honored. Next followed the presentation by Dr. Franklin H. Martin, Director General of the College of the 470 candidates for admission to the Fellowship. Four hundred and forty-four of these were from the United States, eighteen from Canada, one from Brazil, one from Cuba, three from Guatemala, one from China, one from Korea and one from New Zealand. After the ritual of admission was over, Sir Ewen J. Maclean delivered the Fellowship Address in the course of which he touched upon the much vexed question of publicity of medical men in the public press. He said that he favored the greatest care in regard to allowing articles regarding medical men or by medical men to get into the daily press. Any sort of article which gave the impression that a particular doctor had a monopoly of up to date knowledge on any particular disease or organ was highly reprehensible. On the other hand, to forbid a medical man to accept positions of usefulness on public bodies, on account of the publicity such positions brought to the holder, was an objectionable exaggeration, and contrary to the best spirit of the profession.

Dr. W. W. Chipman in his presidential address took as his subject Lord Lister and gave a scholarly and eloquent appreciation of that great man and his deeds for the good of mankind. He pointed out that the bronze doors of the halls of the College of Surgeons in Chicago were ornamented with six panels of six great men of medical history. Below the panel of Pasteur was the panel of Lister, a great man if Quaker origin, who had battled with many obstacles and made modern surgery possible.

Dr. George David Stewart, of New York, is the president elect of the American College of Surgeons for the ensuing year. Dr. Stewart was born in Nova Scotia. In 1889 he was graduated from the Bellevue Hospital Medical College, New York. At the present time he is professor of surgery at the same college. Dr. Truman O. Brophy, of Chicago, and Dr. Frank H. Newburn, of Edmonton, were elected vice presidents for the ensuing year.

Additions to the board of regents for a term of three years were: Drs. Irven Abell, Louisville; Alfred T. Bazin, Montreal; Merritte W. Ireland, Washington; Franklin H. Martin, Chicago and C. Jeff Miller, New Orleans. As said before, this is a somewhat desultory account of a very successful meeting. The hospitals of Montreal cooperated most thoroughly with the College and provided a splendid series of clinics from which no doubt the visitors derived instruction and inspiration. Of course, many happenings of interest have been omitted, but it would be impossible within the scope of a limited article to refer to everything.

It may be mentioned that during the meeting the magnificent Maternity Department of the Royal Victoria Hospital was opened. This building will accommodate about 260 patients, is thoroughly equipped and is a model of its kind. Another occur-

rence which ought to be referred to as it is of great significance was the alliance, so to speak, between the American College of Surgeons and the Moving Picture Producers' and Distributors' Association. Of course, films have been employed in the service of medicine and surgery for some considerable time and have proved of infinite value in depicting and aiding in the explanation of many surgical and medical problems, the details and technic of operations and so on. It is felt that the use of motion picture films may be greatly developed and be of still greater service to humanity and to the medical profession by illustrating operations, some of them, for instance, intricate, performed by masters of surgery. By such means student the world over may study these operations, and learn much from them to the benefit of the whole community. Further future generations will be able to view the great surgeons of the past to their own advantage and to the advantage of their patients.

Mr. Will H. Hays, the head of the motion picture interests, came to Montreal on the last day of the meeting to confer with the Regents of the College and to give an address. His address embodied the remarks made above as to the great value of cooperation between surgeons and physicians and those in control of the motion picture organizations. A special Committee of the College was appointed to develop the broadest possible use of motion picture films in medicine and surgery.

Dr. J. Bentley Squier, of New York, was made chairman of the committee. The other members of the committee are Dr. W. W. Chipman, Montreal, president of the American College of Surgeons; Dr. Franklin H. Martin, its director general; Dr. Allan Craig, Dr. Bowman Crowell and Dr. Malcolm McEachern, Chicago, its associate directors; Dr. Charles H. Mayo, Rochester, Minn., Dr. George W. Crile, Cleveland; and Mr. Will H. Hays, president of the Motion Picture Producers and Distributors of America, Inc.

A feature of the meeting which is well worthy of mention and praise was the really admirable manner in which the daily journals of Montreal and the *Star*, in particular, reported the meetings. The addresses reported as they were reported and interviews given by prominent members of the medical profession as at Montreal during the session of the Congress cannot but have an educative influence for good on the general public.

News Items.

New Course in Medical Biology.—The Michigan State College is offering a full college course for the training of laboratory experts, bacteriologists, serologists, chemists and pathologists, to be administered by a committee of the college faculty, with Dr. Ward Giltner, professor of bacteriology and hygiene, as chairman. Correspondence for information should be addressed to Dr. Giltner.

Tuberculosis Prevention Society.—The new dormitory at Point Pleasant, N. J., of the Society for the Prevention of Tuberculosis Among Children was formally opened on October 11. Among the speakers were Dr. Cepulic Vlad of Sagrad, Jugoslavia, Dr. Lydia Kemper of Berlin, Dr. A. F. Hulse of New York, Dr. M. J. Fine of Newark, N. J., and Mrs. Quimby, superintendent of the Preventorium; Dr. Reselin of Glasgow, and Dr. Stojanargilz.

X Ray and Surgical Clinic at French Hospital.—Announcement has been made by the French Hospital, New York City, that a combined x ray and surgical clinic will be held on Tuesday mornings, which physicians are invited to attend.

Foreign Health Workers Studying Here.—Among foreign health workers studying health conditions and methods in the United States are the following, under a grant from the International Health Board: Dr. Titu Gané, inspector general in Transylvania and professor of medicine at the University of Cluj, Rumania; Dr. Marius Kaiser, head of the Division of Infectious Disease Control, Central Health Service, Austria; Dr. Wilfred A. Nicholas, former port health officer of Singapore. After some weeks of observation at the New York State Department of Health, Dr. Nicholas will go to the Johns Hopkins School of Public Health for a two years' course.

Gifts and Bequests.—Dr. Robert Grigg Reese, whose death occurred in New York City on October 18, bequeathed to the New York Eye and Ear Infirmary, a share of his estate, the value of which is not known at this time, to be used for the erection and maintenance of a glaucoma pavilion to be known as the Reese Pavilion. Dr. Reese left his residence at 50 East Fifty-second Street, together with his medical practice, to his nephew, Dr. Algernon B. Reese, with certain provisions.

Mrs. Elizabeth Clark Rogers, who was killed in a fall or leap from the sixteenth floor of the Hotel Commodore, New York City, on November 2, bequeathed approximately $300,000 to the Medical School of Harvard University. Among other bequests is a $50,000 trust fund for the Niagara Falls Memorial Hospital in memory of her father, the late Dr. Gardner C. Clark of Niagara Falls.

Through its report for 1925, the New York Academy of Medicine calls attention to the following extract from the will of Mrs. Celine B. Hosack: "I do give and bequeath unto my executors, hereinafter named, the sum of ten thousand dollars, in trust, to apply and pay the same (or so much thereof as may be necessary) to the Roosevelt Hospital in the City of New York, to purchase a bed, which, in memory of my husband, shall be known as the Hosack Bed, and which shall be occupied from time to time by such sick and needy physicians as may for that purpose be named or designated by the President and Treasurer for the time being of the New York Academy of Medicine."

A second gift of $25,000 to the Lutheran Hospital of Manhattan has been made anonymously in memory of the late Oscar Scherer, pioneer leather manufacturer, who died in 1923.

Death of Dr. Sartorius.—Dr. August Matern Sartorius, president of the laboratories of Reed & Carnrick, Jersey City, died at the New York Post-Graduate Hospital, November 2, 1926, after an illness of five weeks. Dr. Sartorius was graduated in 1909 from the Brooklyn Polytechnic Institute, where he specialized in science, and received his medical degree from Yale University in 1912. In 1913 he became associated with the laboratories of Reed & Carnrick, where he began to institute research for pluriglandular products, in which he had already achieved unusual success at the time of his death. This is believed to have been due to pathological conditions traceable to an unusually severe experience in the front line trenches when Dr. Sartorius was serving in France as an officer in the Medical Corps of the Army.

Medical Moving Pictures Endorsed by American Surgeons.—At a recent meeting in Montreal, the American College of Surgeons sponsored the use of moving pictures in medicine and surgery. A special committee made a report on the subject, which was adopted. The members of this committee are, chairman, Dr. J. Bentley Squier of New York City; Dr. W. W. Chipman of Montreal, president of the American College of Surgeons; Dr. Franklin Martion of Chicago, director general of the college; Dr. C. H. Mayo of Rochester, Minn.; Dr. Allen Craig of Chicago; Dr. George W. Crile of Cleveland; and Dr. Bowman Crowell and Dr. Malcolm MacEachern, directors of the college. The committee suggested that a bureau of information be established at the headquarters of the College of Surgeons in Chicago to make available to the medical profession information as to what films are available for both lay and professional use, where such films can be obtained, and whether they are reliable and satisfactory for teaching purposes.

Testimonial Dinner to Dr. Downing.—A testimonial dinner to the Deputy Commissioner of the State Department of Education, Dr. Augustus S. Downing, was held at the Hotel Commodore, New York, December 9, 1926, at 7:30 p. m. The presiding officer was Dr. Livingston Farrand, president of Cornell University, and the principal speaker of the evening was Dr. Nicholas Murray Butler, president of Columbia University, and Dr. Wendell C. Phillips, president of the American Medical Association.

Personal.—Dr. Adolf Lorenz of Vienna arrived in New York on November 21st to resume his work throughout the country.

Dr. Francis Weed Peabody of Boston has been made a member of the Board of Scientific Directors of the Rockefeller Institute for Medical Research. Dr. Peabody is professor of medicine at the Harvard Medical School and Director of the Thorndike Memorial Laboratory in Boston City Hospital. He is a graduate of Harvard University and of Harvard Medical School and was a Fellow of Johns Hopkins Medical School. He is a trustee of the China Medical Board of the Rockefeller Foundation.

Effie J. Taylor, a member of the faculty of the Yale School of Nursing, has been appointed professor of psychiatric nursing at Yale University. Miss Taylor was director of the Army School of Nursing during the World War, and was for seven years director of the nursing service at the Henry Phipps Psychiatric Clinic at Johns Hopkins.

Dr. Nathan Raw of London, internationally known authority on public health, has recently been visiting New York City. Dr. Raw was one of the speakers at the fourth annual Sickness Prevention in Industry Conference, called by the Brooklyn Tuberculosis and Health Association of the Bureau of Charities, and held at the Grand Central Palace, New York City.

Dr. Adolph G. G. de Sanctis has been appointed professor of pediatrics at the New York Postgraduate Medical School and Hospital.

Society News and Notes.

The Medical Society of the County of New York held its 121st annual meeting recently, at which the following were elected officers for the coming year: president, Dr. Henry S. Patterson; first vice-president, Dr. John Douglas; second vice-president, Dr. Dewitt Stetten; secretary, Dr. Daniel S. Dougherty; assistant secretary, Dr. J. Milton Mabbott; treasurer, Dr. James Pedersen; assistant treasurer, Dr. Ten Eyck Elmendorf; censors, Dr. Edward M. Colie, Jr., Dr. Terry M. Townsend, Dr. Howard G. Meyers; chairman of the Committee on Membership, Dr. Percy H. Williams; chairman of the Committee on Civil Policy, Dr. Charles G. Heyd; chairman of the Committee on Legislation, Dr. Walter T. Danreuther; delegates to the Medical Society of the State of New York, Dr. Milton A. Bridges, Dr. Coley, Dr. Elmendorf, Dr. William P. Healy, Dr. Mabbott, Dr. Patterson, Dr. Pedersen, Dr. Malcolm C. Ross, Dr. Mary D. Rose, and Mr. Townsend.

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Under the auspices of the Lutheran Hospital Association, a ceremony was conducted on Sunday, November 28th, for the breaking of ground preparatory to building the new Brooklyn Lutheran Hospital at East New York Avenue and Junius Street. D. Tietjen, president of the association; A. H. Legenhausen, chairman of the Board of Trustees; and Dr. Vincent Barber, president of the Lutheran Hospital staff, officiated at the ceremony. There were addresses by a number of prominent clergymen of Greater New York.

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The New England Industrial Nursing Association held a meeting in Boston on October 9, at which the chief speaker was Joseph A. Parkes of the Industrial Accident Board of Massachusetts. The discussion centered on injury to workmen and compensation.

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Coming December meetings include the American Association for the Advancement of Science, Philadelphia, December 27-January 1; the National Community Center Association, St. Louis, December 28-31; the New York Microscopical Society, Friday, December 17, at the American Museum of Natural History; and the annual meeting and dinner of the New York Academy of Sciences, Monday, December 20, at the Hotel Biltmore, New York City. Upon the last occasion, President Henry E. Crampton and Dr. G. Kingsley Noble will make addresses. Some interesting motion pictures will be shown.

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At the stated meeting on December 2, of the New York Academy of Medicine, the following were elected officers for the coming year: president, Dr. Samuel Lambert; vice-president, Dr. William H. Park; treasurer, Dr. Seth M. Milliken; trustees, Dr. Charles L. Dana and Dr. Samuel A. Brown; member of the Library Committee, Dr. Eugene F. Dubois; and member of the Committee on Admissions, Dr. Alexis Moschowitz. The selection comprised the entire slate of regular nominees, who were elected by a unanimous vote.

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The American Society of Medical History held its ninth meeting on November 25, at the editorial offices of *Medical Life,* New York City. Dr. C. Hemmeter, of Baltimore, spoke on the Philosophy of History. Dr. Louis Faugères Bishop presided at the meeting.

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The National Committee for the Prevention of Blindness held its twelfth annual conference, December 1-2, at the Russell Sage Foundation Building, New York City. The program included joint meetings with the American Social Hygiene Association, the National Organization for Public Nursing, and the Eastern Association of Indian Affairs. There was a sight saving class conference, at which the discussion centered upon a report of the British classes based on a recent study, and a special meeting in commemoration of the late Louisa Lee Schuyler.

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The Sixth Conference of the International Union against Tuberculosis will be held in 1928 at Rome, Italy. One of the chief speakers at the last conference, held in Washington in October, was Prof. Gaetano Ronzoni, of Milan, whose paper was on contagion in tuberculosis among adults.

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Dr. Abr. L. Wolbarst was the guest of the Orange Mountain Medical Society, East Orange, N. J., on Friday, November 19th. He read a paper on "Hematuria, With Special Reference to Diagnosis."

* * *

The New York County Chapter of the American Red Cross has recently made public a report of its work during the last twelve months. Financial relief to disabled war veterans and their families amounted to more than $40,000. More than 25,000 men, women and children have taken life-saving instruction in connection with the Red Cross life-saving program. Nearly 600,000 surgical dressings for sixteen of the city's hospitals were made by volunteer workers. By means of a process perfected by Red Cross workers, 56 volumes of raised type books for the blind have been duplicated. Volunteers have also made 12,000 original pages of raised type books, which have all been sent to the Library of Congress in Washington for general distribution to the blind. A total of more than 15,000 individuals and families have been aided by the New York Chapter.

* * *

The Baltimore Medical Club of New York City held its autumn meeting at the Hotel Commodore, Lexington Avenue and Forty-second Street, New York, on Wednesday evening, December 8, 1926, at 7.00 p. m. The guests of the evening were Dr. J. M. H. Rowland, dean of the Medical Faculty, University of Maryland, Baltimore, and Dr. Wendell C. Phillips, president of the American Medical Association, who gave addresses on matters of especial interest to Baltimore graduates. There was also an entertainment furnished by popular theatrical stars under the leadership of Mr. Howard Wade Kimsey and Mr. Arthur Gordoni. This club consists of graduates of the medical colleges of Baltimore residing within the metropolitan district, which comprises New Jersey, Connecticut, Long Island and New York State within a radius of sixty miles. The officers are: Dr. David E. Hoag, president; Dr. Dougal Bissell, vice-president; Dr. Dumont Elmendorf, secretary; Dr. W. G. Lough, treasurer; Dr. W. B. Pritchard, chairman of Executive Committee; Dr. L. Winfield Kohn, chairman of Committee on Attendance and Publicity; Dr. J. Morley Hitzrot, chairman of Reception Committee.

Book Reviews

HEART DISEASE

Principles of Diagnosis and Treatment in Heart Affections. Sir James Mackenzie, M.D., and James Orr, M.B., Ch.B. Third edition. London and New York: Oxford University Press, 1926. Pp. 242.

This third edition of Mackenzie's well known small book has been prepared by Dr. James Orr, his associate at the St. Andrew's Institute for Clinical Research. In preparing the present edition the main object has been to make it representative of the newer teaching of Mackenzie, without sacrificing the distinctive clinical character of the original work. Mackenzie's newer theories are expounded in the fourth edition of his large book, which appeared just before his death. They postulate that all symptoms are due to a disturbance in the reflex arc of the regulating mechanism of the organ. Although, to the reviewer, the application of these theories does not always appear to clarify the subject, the book is written with Mackenzie's customary lucidity and force of style.

A number of points are worthy of mention. The author suggests that exhaustion in patients with heart disease is usually due to vasomotor disturbance and not to the heart. This is an important point for the practitioner, for such patients are usually relieved by a tight abdominal binder. The discussion of neurocirculatory asthenia is clear, but undue emphasis is placed on toxemia as a cause for the symptoms, and the constitutional element so important in many cases is neglected. In the chapter on prognosis, the dependence that must be placed on the extent of recovery after appropriate treatment is well stressed. The principles underlying the diagnosis of the cardiac irregularities, affections of the myocardium, as well as the treatment of heart disease, are briefly but adequately expounded. The book will continue to be very valuable to the practitioner as an introduction to the study of cardiac disorders.

CHEMOTHERAPY

The Scientific Basis of Chemotherapy. By Iwan Ostromislensky, Ph.D., M.D. Formerly Director of the Chemotherapeutic Section of the Scientific Institute, Glavchimfarmzaw, Moscow. New York: Published by the Author, 1926. Pp. 142.

The author presents a new dualistic chemotherapeutic theory and gives its relationship to Ehrlich's side chain theory. He compares the mechanism of the curative action of salvarsan preparations, of quinine and of his recently discovered preparation pyridium. There is a chapter on the function of protective colloids in medical preparations, and detailed information as to the nature of pyridium, its chemical and physical properties, its biological constants and its possible therapeutic value.

Pyridium is stated to have a group selective action on the cocci genus, being bactericidal toward streptococci, Micrococcus tetragenus, staphylococci, pneumococci, and diplococci of various strains. It appears to have a high penetrating power. The action of pyridium in the following diseases was investigated: chancroid; diseases of the eye; serpiginous ulcer of the cornea, conjunctivitis, keratitis herpetica; pyorrhea alveolaris; infections of the nose and throat; prophylactic in surgical cases; furunculosis; phlegmona; osteomyelitis; paronychia; cystitis; various gynecological conditions; gonorrhea.

If the original findings of the author and his coworkers are confirmed the remedy may prove to be a valuable addition to the present day list of the therapeutic agents. Its possible value in the treatment of gonorrhea should lead genitourinary specialists to investigate the remedy.

CIRCULATION, NORMAL AND ABNORMAL

The Heart. By Alexander George Gibson, D.M., F.R.C.P. London and New York: Oxford University Press, 1926. Pp. 108.

It is the object of this little book to deal briefly with the fundamental principles which underlie the study of the normal and abnormal circulation, and to illustrate these by their applications in general practice. It is designed for students and practitioners. In the short compass of one hundred duodecimo pages the author has succeeded remarkably well in presenting the important principles and facts necessary for the understanding of the functioning of the normal circulation, as well as of the disturbances in structure and function consequent on disease. Principles of prognosis and treatment are admirably presented. Throughout the book the clinical point of view is predominant. The author's claim not to have omitted any fundamental aspects, be it of craft or of philosophy, which bring meaning into these phenomena of disease, may be freely allowed.

LATENT TUBERCULOSIS

La Tuberculose Pulmonaire Latente—Pretuberculose sommets suspects. Par J. Rieux, Medecin-Inspector, Ancien Professeur au Val de Frace. Paris: Gaston Doin et Cie, Editeurs, 1926. Pp. 247.

This is a highly interesting book on an important subject. Rieux, who has been a military surgeon for thirty-five years, serving throughout the World War, has dedicated this book to his noble comrades, the army physicians of France. He says that he has written the book for the purpose of solving the difficult problem of latent tuberculosis in the endeavor to establish scientifically the basis of a practical method to decide definitely in each particular case whether latent tuberculosis is absent or present. The book comprises six chapters. In the first the author describes the various stages of tuberculosis in the human being, giving Debré's and in addition Bernard and Vitry's interesting statistics of positive tuberculin reaction. In both tables of statistics the highest percentage of positive reaction in children occurs between the ages of thirteen and fifteen. Unfortunately, Rieux does not state whether the cutaneous reactions were obtained by the Von Pirquet or the Mantoux tests, for the latter is known to be far more reliable than the von Pirquet. He maintains that in the female population the greatest tuberculosis mortality is between the ages of twenty and twenty-five. This does not correspond with our own more recent statistics which would show that the mortality is greatest between the ages of fifteen and twenty, and in girls even between twelve and eighteen. The second chapter the author consecrates to the symptoma-

tology of latent tuberculosis and admits the great difficulty in its diagnosis. He pays considerable attention to the family and personal history, and concerning the symptomatology he does not agree with Rist, who believes that positive sputum is sufficient, and necessary even to determine a very early tuberculosis. In the third chapter, which deals with the radiographic pictures of the lung, the author established the following distinct types. First, the normal type, then the hilus types which he subdivides into cicatrized and active; a third is pleural lesions, which he again divides into cicatrized and active; and, lastly, the mixed type in which all the previous pictures may be combined. The fourth chapter treats of biological reaction in which the various and well known tuberculin reactions are described, from von Pirquet down to Wildholz. Rieux wisely admits the abandonment of the ophthalmic reaction. He claims that the Mantoux reaction is rarely resorted to because it is more complicated, but admits that it is a little more sensitive than the von Pirquet. In the fifth chapter he described the pathology and symptomatology of the various types already mentioned. The final chapter, however, the author consecrates exclusively to diagnosis, differential diagnosis and prognosis of latent or occult tuberculosis. Nothing new is offered in these chapters but he reviews carefully all that is known of the diagnosis and differential diagnosis and emphasizes the importance of combining physical signs, symptoms and personal history in arriving at some definite conclusions in strongly suspected cases. He finally urges a guarded prognosis in all cases where a latent tuberculosis is absolutely confirmed by the diagnostic means at our command.

Rieux's studies of latent tuberculosis are made particularly interesting by his giving the radiographic pictures of twelve cases of the various types of tuberculosis and of one normal thorax. As a whole, it can be said that the book is one of the best of its kind and of value to the specialist as well as to the general practitioner.

DERMATOLOGY

Fundamentals of Dermatology. By Alfred Schallek, M.D. Illustrated with Fifty-Four Engravings. Philadelphia and New York: Lea & Febiger, 1926.

The aim of this work is to give the fundamentals of dermatology in a concise and thorough manner, for the particular use of students and general practitioners, replacing a compend which has been in use for some years. The author has succeeded in this aim in a satisfactory degree. This work treats the subject in a manner which places the fundamentals within easy reach of the reader who has not the time nor the wish to wade through the average dermatological textbook. Nothing but the essentials has been incorporated in this work. This is particularly noticeable in the consideration of syphilis, which is admirably treated in less than fourteen pages of reading matter. The author has condensed a vast amount of useful advice in a two page chapter on "Dermatological Aphorisms," a careful study of these aphorisms will be of the utmost practical value both in the diagnosis and treatment of skin lesions. The printing is good and the illustrations excellent. It is to be regretted, however, that some of the latter are not in color.

LEADERSHIP

Leadership. A Manual of Conduct and Administration by William Colby Rucker, M.S., M.D., Dr.P.H., Surgeon, U. S. Public Health Service. New York: The Macmillan Company, 1926. Pp. 171.

Once in a while there comes to the reviewer's desk a book which is easily read and is full of stimulating and well organized ideas. Rucker's book taps a new vein so far as the field of institutional and sanitary medicine are concerned. It is well written and presents in an interesting and stimulating form the basic principles of the art and practice of leadership. The foreword is written by Surgeon General H. S. Cumming of the United States Public Health Service and he expresses the very pregnant thought that "the hospital administrator and the practitioner of public health must be more than a physician and surgeon, an engineer or a technical worker, he must be an administrator and he should understand the principles of leadership as they are applied to the multiform operations in the remediation and prophylaxis of disease."

In the past we have been so busy with the technical details of prophylaxis and cure that few have given thought to those attributes of mind and character which best qualify those who head such movements for leadership of themselves and the general public. *Leadership* lays these down without preaching and in a manner which renders it valuable to those who are engaged in the indoctrination of the public in medical service and public health matters.

While written primarily for the Public Health Service, it is a book which should prove exceedingly useful to all of the medical services, both federal and state. It is well printed and bound and is of convenient size. Its table of contents and its index are full and complete. It should meet with a hearty welcome.

THE DOCTOR LOOKS AT ECCLESIASTICAL ARCHITECTURE

Historic Churches of the World. By Robert B. Ludy, M.D. Boston: The Stratford Company, 1926. Pp. 325.

Wherever we find man there we find places of worship. While the name and the attributes of the duty vary, while the form and dimensions of the place of worship differ widely, from the open air altar of the Aztec to the massive Cathedral of St. Peter's in Rome, there is always some place of worship. We have not really seen England until we have seen St. Paul's and the cathedrals of the East Coast; no visit to Paris is complete without a view of the Madeleine; not to have seen the Parthenon is not to have seen Athens, while the Cathedral *is* Rheims.

Dr. Ludy covers an interesting field in a most interesting manner, giving descriptions and illustrations of hundreds of historic churches in both the old world and the new; from the pre-Christian temples of Egypt and Asia to the early missions of the California padres. Even the simple little meeting houses of the austere Pilgrims are included.

All who are interested in the early history of the United States will find in Dr. Ludy's book a great deal that will interest him concerning the churches of that period.

Medicoliterary Notes.

The report of an interesting set of experiments has been announced as to appear in the near future in *Industrial Psychology*, published by Colgate University. These experiments were conducted during the past year by Donald Laird, professor of psychology at the university, assisted by William Wheeler, Jr., now at the College of Physicians and Surgeons of Columbia University, New York City, and had to do with the physical and mental effects of sleep. The mental reaction of sleep was taken in caloric values. One of the interesting discoveries made was that a good soft bed is equivalent in value to two hours of sleep. It was found that, after eight hours of sleep in a good bed, about six calories of energy were used, as opposed to eleven calories in a hard, uncomforable.

* * *

Rip Van Winkle, the nickname given to the armored dinosaur which has recently been placed on exhibition in the London Museum of Natural History, was a vegetarian, according to the label attached by naturalists to its glass case, says the *New York Times*. Thus it has taken thirty million years to explode the myth that the animal was a murderous monster and terror to such men as Mr. Neanderthal and M. Cro-Magnon, the most famous of the prehistoric people. According to the naturalists a tiny disease carrying flea which occupies a case adjoining that of the dinosaur, was a far deadlier creature.

* * *

The American Journal of Hygiene Monograph Series devotes its issue for September to an excellently illustrated description of the new School of Hygiene and Public Health at Johns Hopkins University. The School includes departments of public health administration, epidemiology, biometry and vital statistics, medical zoology, bacteriology, immunology, phsiological hygiene, chemical hygiene, and filterable viruses.

* * *

A woman who was considerably overweight asked the doctor what she should do to reduce. "Take a proper kind of exercise," the doctor replied. "What kind do you recommend?" she asked. "Push yourself away from the table three times a day," replied the doctor.—*Popular Health.*

* * *

At the recent meeting in Philadelphia of the American Chemical Socity, Dr. J. W. Turrentine of the U. S. Bureau of Soils read a paper in which he emphasized the use of iodine found in certain marine plants as being two hundred times as effective as inorganic iodides. Dr. Turrentine stated that the symptoms of iodism, often resulting from the use of inorganic iodides, were lacking, and that there were no disturbances such as result from the use of thyroid preparations.

* * *

"When the Medical Profession of New York Paid Homage to the Autocrat of the Breakfast Table," is the title of an interesting account in *Notes and Abstracts* for October of the dinner given in honor of Dr. Oliver Wendell Holmes at Delmonico's, then on Fifth Avenue at Fourteenth Street, on April 12, 1883.

* * *

According to a report of the British Railways recently made public, only one passenger lost his life as the result of a railway accident in Great Britain in 1925. This man was not killed outright, but died afterward from shock due to bad health at the time. In the years 1908 and 1901 there was not a single fatality among passengers. The only recent year showing a large number of deaths in railway accidents was 1915, when 224 soldiers were lost in a troop train accident. In 1923 there were 25 deaths, in 1906 there were 53, and in 1913 there were 33. In 1909 there was one fatality, 6 in 1914, and in 1919 and 1916, there were 3 each.

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The Massachusetts Department of Mental Diseases devotes the whole of its *Bulletin* for April to an Article by Dr. James V. May, superintendent of the Boston State Hospital, on the Psychoses of the Period of Involution.

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Two interesting contributions to the subject of marriage have recently been published, namely, Edward Westermarck's *Short History of Marriage;* and the *Book of Marriage,* a symposium on the subject edited by Count Hermann Keyserling. One of the contributors to the material in the latter volume is Dr. Mathilde von Kemnitz now the wife of General Ludendorf.

* * *

The Essex County Council have taken effective steps towards reducing the noise nuisance caused by the hawking fraternity says *Municipal Enginering and the Sanitary Record* (London), and have passed the following resolution: No person shall, for the purpose of hawking, selling, distributing or advertising any article, for the purpose of purchasing or collecting rags, bones, bottles or old clothes, shout or use any bell, gong or other noisy instrument in any street or public place, so as to cause a disturbance or annoyance to the inhabitants of the neighborhood. Nothing in this by-law shall prohibit any bell or other instrument being rung or sounded in any public market during the time the market is being held.

* * *

Two Swiss scientists, Dr. Klovester and Dr. Deesalies, claim according to recent European press reports, to have discovered that a certain group of stars send out light rays of which the radioactive force is far greater than that of the Roentgen rays. The scientists hope to capture and employ these rays for medicine and general science. It is reported that, owing to the cold of the winter and the high altitude of the Alpine peak on which the experiments are being made, work will have to be postponed until next spring.

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An important contribution to the subject of cancer mortality has recently been issued by the U. S. Public Health Service as *Public Health Bulletin* No. 155. It is entitled the Course of Cancer Mortality in the Ten Original Registration States for the 21-year Period 1900-1920. Surgeon J. W. Schereschewsky is the compiler.

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A young Frenchman, working in Paris in a market garden, claims to hold the world's record for blood transfusion. He is on record as having contributed in 87 transfusion operations since 1924 twenty-two litres, or about five gallons, of his blood to hospital patients. He was presented at the International Congress of Surgery in 1925 by Dr. Becart, who has invented the indirect method of blood transfusion.

* * *

Labor and Industry, the publication of the Department of Labor and Industry of Pennsylvania, features in its issue for September Safety in the Construction Industry, and in its October issue, Safety in the Quarry Industry. It is stated that 105 persons have been killed and 2,000 injured in the building and contracting industry in Pennsylvania within six months.

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Those who were entertained by reading John Erskine's clever and amusing *Private Life of Helen of Troy,* will find pleasure in an article by him in the *Delineator* for October "Explaining Helen."

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Announcement has been made that the *Radiological Review*, beginning with the issue for January 1927, will be published monthly instead of bimonthly, and will increase its number of pages from 32 to 64.

* * *

A Congressional appropriation has recently been made for the maintenance of a medical service for natives of Alaska living in isolated communities. This is a ship equipped for emergency treatment and in charge of a competent physician. Scattered groups in remote places along the Yukon and its tributaries, from the Canadian border to St. Michael, are served during the summer months when navigation is possible.

* * *

The Jassy Medical Association of Bucharest has announced recently through the press that, after fifteen years of research, Dr. Petrof, a Bessarabian, has succeeded in discovering and coloring exanthematic typhus bacilli. His theory is that the bacillus originates with an ordinary beetle, from which it is transmitted to animals, thence to man. The Jassy association is subjecting Dr. Petrof's work to a thorough examination preparatory to submitting a report to the Paris Institute of Science.

Abstracts from Current Literature

DERMATOLOGY

The Febrile Types of Erythema Multiforme and Erythema Nodosum.—George Blumer (*Boston Medical and Surgical Journal,* September 9, 1926) is inclined to think that there are febrile types of both erythema multiforme and erythema nodosum which are not obviously secondary to preceding infections or intoxications; that there is some evidence of an epidemiological nature which suggests that febrile erythema multiforme and febrile erythema nodosum may be specific infectious diseases, and that there is suggestive evidence that the febrile types of erythema multiforme and erythema nodosum may be manifestations of streptococcus infection. It is possible that the two types, febrile erythema multiforme and febrile erythema nodosum, may both be expressions of the same form of infection, though this cannot be proved until the discovery of the etiological agent or agents is satisfactorily substantiated.

Etiology of Herpes Zoster.—Rufus Cole and Ann G. Kuttner (*Journal of Experimental Medicine,* December, 1925) studied nine cases of herpes zoster, and made inoculations into a series of animals, in an attempt to produce lesions in them by the injection of material obtained from the vesicles and involved skin. These attempts proved unsuccessful in rabbits, guineapigs and monkeys.

Curative Treatment of Vitiligo.—Joseph Rivière (*Urologic and Cutaneous Review,* February, 1926) recommends alternating the actinotherapy both local and general with high frequency effluves and static baths, finally, to act upon the hematopoiesis, the pigment function of which appears to be affiliated with it, and to obtain thus a trophic whiplash cooperating usefully with the functional reequilibrium of the integument. Sometimes it is advantageous to apply x rays to the liver and spleen with a view to exciting the pigment forming organs. It is also equally of advantage to stimulate the hepatointestinal function by means of calomel and cholagogue salicylates. These remedies, since they are alkaline, combat at the same time any constitutional arthritism. If neuroarthritism is predominant one should resort also to d'Arsonvalization.

Lichen Nitidus.—H. W. Barber (*British Journal of Dermatology and Syphilis,* April, 1926) believes that the disease is not so rare as is commonly supposed. The simple form of the eruption, which consists of minute, discrete papules, is apt to escape the notice both of the patient and the physician, whereas the diffuse, generalized form is often wrongly diagnosed even by professed dermatologists.

The elementary lesion of lichen nitidus is a minute papule formed by a more or less sharply defined granuloma, which lies, as a rule, just below the epidermis. These papules are not usually larger than the head of a pin, flat, conical or globular in shape, and slightly raised above the surface. Their color varies; they are commonly reddish or reddish yellow. A very characteristic feature is that they often have the glistening appearance implied by the epithet "nitidus," and appear as minute reddish spots shining through a transparent overlying epidermis. They are rendered anemic by pressure. There may be no changes in the surrounding skin, having a strictly limited distribution, as on the penis in men, the lower abdomen, groins, and inner surfaces of the thighs, and on the flexor surfaces of the wrists and forearms and backs of the elbows.

In other cases the eruption becomes widespread and loses its primary papular appearance in certain regions. The eruption may consist of diffuse pityriasiform or psoriasiform sheets, which are very characteristic in appearance. Their color varies in different patients and in different situations, being either reddish-yellow, brownish, or reddish-violet. These diffuse sheets may be widespread, but they are particularly likely to involve the joint flexures, such as the antecubital and popliteal spaces. The anterior surface of the wrists and lower part of the forearms, the extensor surfaces of the knees and elbows, the folds of the neck, the submammary region in women, the groins and thighs, the palms and soles and dorsal surfaces of the hands and feet may all be affected. There is both parakeratosis and hyperkeratosis. The nails may also be involved, being brittle and fissured. The buccal mucous membrane may also be involved.

The etiology of lichen nitidus is entirely unknown. The author does not believe the disease to be of tuberculous origin.

Spontaneous disappearance of the lesion has been reported. Fractional doses of x rays have been reported to be of benefit. Crude coal tar paste may also be useful. The internal administration of iodin in the form of a ten per cent. solution in spirit vini rect. is followed by gradual but very definite improvement.

Cryotherapy in Dermatology.—Lorat-Jacob (*Urologic and Cutaneous Review,* April, 1926) employs a cryocautery which measures the pressure exerted and permits intimate contact between the tissues to be treated and the source of the cold. It also obviates one manipulation and economizes the quantity of snow employed by reason of its direct charging.

The cold acts by producing necrosis of the cellular elements at the point of application, producing ischemia and particularly thrombosis, making cryotherapy particularly suitable in the treatment of very vascular tumors. It is also valuable because it leaves inconspicuous cicatrices. It is also indicated in epithelioma of the face of old persons, erythematous or tuberculous pupus, nevi and hyperkeratosis. In xanthelasma of the eyelids cryotherapy is the only local treatment because it is harmless and active. It serves admirably in leucoplasia of the oral mucosa, where it does not expose the epithelium to subsequent degeneration.

Erythema Infectiosum.—A series of seventy-four personally observed cases of erythma infectiosum is presented by Theodore P. Herrick (*American Journal of Diseases of Children,* April, 1926) and all the evidence in these cases indicates that the disease is a distinct entity, is infectious, and results in the establishment of a specific immunity.

The distinguishing features of the disease are its occurrence in epidemics, the lack of constitutional symptoms, the lack of any features distinctive of the other exanthems, the long course and characteristic progression of the rash, its evanescence at all stages, and particularly the irregular but brilliant outlines seen on the arms and legs in the third stage and in the recurrences. The one adult suffering from the disease had no rise of temperature but she felt miserable and her arms ached.

Burns.—E. C. Davidson (*American Journal of Surgery,* 40:5) maintains that the adequate forcing of fluids and the administration of sodium chloride to correct the disturbed metabolic balance are rational procedures in combating the socalled toxemia of burns. Coagulation of the devitalized tissue by the use of tannic acid lessens toxemia. Tannic acid as an initial dressing has an analgesic effect. Secondary infection is limited by this method of treatment because of the absence of a favorable nidus for bacterial growth. Scar tissue formation has been lessened.

Pruritus Ani.—H. B. Stone (*Surgery, Gynecology and Obstetrics,* 42:4) advocates a treatment based upon the principle of the destructive effect of alcohol on nervous structures. It gives prompt and complete relief and there are no serious complications or disadvantages to fear.

The patient is placed in the lithotomy position under light general anesthesia: ethylene gas is particularly suitable, but nitrous oxide or light ether may be employed. Formerly local anesthesia was given in a number of cases, but general narcosis is better. The infiltration of the tissues with local anesthesia dilutes the alcohol and is otherwise confusing by distending the area injected. The field is prepared as for any operation, and by the field is meant the whole of the area involved. At times this may extend backward over the sacrum, forward about the genitalia and groins, and laterally toward the buttocks. The patient can describe the extent of the involvement before operation, but as a rule the inflamed and indurated appearance of the skin itself indicates the region to be injected. The material used is pure ninety-five per cent. grain alcohol without denaturizing substances. This is injected with the ordinary small hypodermic syringes, with fine needles not over an inch long. Larger syringes and coarser needles may lead to placing too much alcohol in one spot or putting it in under too great pressure. The needles are plunged vertically entirely through the skin, and the alcohol injected into the

subcutaneous tissues. Only two to four drops are injected at each puncture. The punctures are spaced about one fourth inch apart and are "stippled" over the entire area involved. The injections are carried up to about one-fourth inch from the anal margin, but are not made within the anal canal itself. The scrotum, labia majora, and folds of the groins have been injected without resulting trouble. Bloodvessels of course are to be avoided when possible.

After completing the injection, the area is sponged off with a wet alcohol sponge. No dressing is used. There is little after soreness, and if the injection has been properly performed, the itching is abolished at once. When the method was first being developed, there was some concern about possible sphincter paralysis, and sloughing of the skin. In no case has there been any muscle disturbance, and with the technic here described, no sloughs of any moment whatever have developed. Among the first cases there were several sloughs, due to the placing of too large a volume of alcohol through single puncture wounds, and also to injecting by mistake into the skin instead of under it. After an injection, there is a noticeable numbness of the perianal skin, but no disturbance of the sensory features of the act of defecation. There is a remarkable return of the skin to normal appearance within a few days after injection.

Rational Management of Skin Grafts.—F. Smith (*Surgery, Gynecology and Obstetrics,* 42:4) says that it is obvious that a graft is parasitic and must exist upon the absorption of "tissue juices" or lymph during its first two or three days of existence. Hence, its intercellular spaces must be open to the circulation of lymph in order that nourishment may be carried to its cellular elements. Whole blood cannot accomplish this requirement and its collection beneath a graft causes it to perish. These considerations make it obvious that the commonly accepted advice to allow for contraction and to cut the graft one-third to one-half larger than the area to be covered is one of the commonest sources of failure. The graft must be cut accurately to size and maintained at normal tension. For the same reason, it must be accurately approximated by carefully placed sutures.

The skin must be free from fat and the graft must be accurately approximated to its base by a proper, even pressure. The proper pressure must be that pressure which insures maximum nourishment, lymph, to the part and the graft and prevents fluid collection, with consequent flap separation. Any factor which will raise the capillary pressure will favor the increased flow of lymph. Further, we know that the peripheral venous pressure varies from five to fifteen millimetres of mercury and that the arteriole pressure ranges from forty to fifty millimetres of mercury. A pressure, then, which will compress the venules, that is, more than fifteen millimetres of mercury, and will partially compress the arterioles, meets our requirement. A dressing at a pressure of thirty millimetres of mercury has been very satisfactory in our experience.

Finally the grafted part should be immobilized for several days. During the first twenty-four hours the graft is glued to its base by coagulated lymph which must not be disturbed.

Succulence and Adherence of the Skin as a Sequela of a Lymphatic Stasis in Processes in the Region of the Parietal Pleura.—Josef Sorgo (*Wiener klinische Wochenschrift,* April 22, 1926) reports upon his observation of an increased succulence and adherence of the skin of the chest in chronic affections of the pleura. This finding is particularly valuable in the diagnosis and proper interpretation of apical processes and, together with röntgenography of the pulmonary and pleural processes, offers a certain differential sign between them. The author has found that a majority of the cases, which are practically diagnosed as apicitis show only changes at the apical pleura with complete röntgenological integrity of the apical pulmonary tissue, and consequently good röntgenograms should be associated also with fluoroscopy. It is still uncertain whether these changes originate primarily in the periosteal or visceral pleura, but this is shown well by a characteristic picture.

There is unilateral or bilateral succulence of the skin fold in the supraspinous fossa or beyond it, with slight dulness in the corresponding area, which is usually considered to be due to the soft parts in the absence of a thickened apical pleural induration, very superficial and peculiar fine and coarser râles which are definitely of pleural origin, but which can easily be mistaken for bronchitic râles and röntgenologically show nothing or uniform clouding of the apical area without local shadows or more or less distinctly pronounced thickenings of the pleura, or the socalled lamellar pleuritis of the röntgenologist. The often very marked pleural changes passing beyond the region of the apex, recognizable by the succulence of the skin fold, with such röntgenological findings allows one to draw the certain conclusion that the frequently reported annually recurring socalled apical catarrhs are nothing else than a progressive advance of the pleural process, which may become very extensive.

With the aid of this skin symptom we are in a position to recognize the pleural changes with great certainty in its initial stages and, particularly to follow the extension with great accuracy, as the succulent skin represents a true projection picture of the changes going on in the parietal pleura. The skin changes described are produced only by pathological processes in the lymphatic area of the parietal pleura, primary or secondary.

The Neurological and Endocrinological Aspects of Ichthyosis, Chronic Indurative Eczema, and Some of the Minor Forms of Socalled Trophic Changes in Dermal Tissues.—The skin and its appendages, including the nails, hair, and pigment bodies, the pilomotor muscles, and the sweat glands, as well as the subcutaneous tissue and the bones, F. M. Pottenger says (*Endocrinology,* March-April, 1926, vol. 10, page 105) are all under the control of the vegetative nervous system. Likewise the relationship is very close between this system and the endocrine glands. The explanation of many pathological changes in the skin structures, accordingly, he is inclined to find in endocrine disturbances, particularly of thyroid secretion. In treating pulmonary tuberculosis he has several times encountered ichthyosis or chronic eczema of long standing which improved greatly on thyroid extract accompanied by intravenous injection of calcium chloride, the tuberculosis also undergoing a parallel improvement. Several very interesting cases are cited. Indicative of the intimate part played by the nerves in these is the fact that all the various mechanisms—trophic, sweat, vasomotor, pilomotor—were affected, and even the subcutaneous fat distribution. Relapses occurred during periods of nervous stress and when the weather grew cold. Since the former are times when nerve imbalance is accentuated and the latter when thyroid deficiency shows most markedly and the calcium content of the cells is relatively low, the author thinks it justifiable to assume that these lesions do not represent a pathologic condition of one phase of vegetative control to the exclusion of others, but rather a general disturbance of all—the nerves, the endocrine organs, particularly the thyroid, and the automaticity of the cell itself, especially as it depends upon its ionic content, its permeability, and its reactivity.

Herpes Zoster Oticus and Allied Conditions.—Thomas Guthrie (*Lancet,* April 3, 1926) reports three cases of this rare condition. It is met within about one in twenty thousand cases of ear disease. Pain about the pinna and mastoid region may be severe and may be present for two or three days before the eruption appears. It may be the first symptoms or be preceded by vertigo. It is sometimes present also in the distribution of the upper cervical and the fifth nerves, due to coincident inflammation of the corresponding ganglia, or in the case of the fifth nerve to its connection with the geniculate ganglion through the great and small superficial petrosal nerves.

As the eruption affects the tympanic membrane and skin of the meatus as well as the pinna, there may be, two or three days after it has appeared, much inflammatory swelling of the meatal walls with otorrhea and sometimes secondary swelling of the mastoid lymphatic gland. These appearances, together with the intense pain, deafness, facial palsy, and sometimes pyrexia, are very suggestive of acute otitis media with mastoiditis, for which cases of herpes zoster oticus are occasionally mistaken. Points of importance in the diagnosis are: 1, the nature and the distribution of the eruption; 2, the type of the deafness, namely, inner and not middle ear deafness; 3, loss of taste, in the corresponding side of the tongue, owing to affection of the chorda tympani nerve; 4, absence of perforation of the tympanic membrane, although its appearance may be much altered by the eruption, and, in any case, an intact drum does not of course exclude disease of the middle ear.

The duration of the disease varies considerably. Some

degree of neuralgic pain usually persists for two or three weeks. The facial paralysis may be evanescent, lasting only a few days, or it may disappear gradually during the course of some weeks. The same applies to the deafness and other symptoms of eighth nerve involvement. In rare cases some degree of facial palsy and nerve deafness is permanent.

Treatment consists of sedatives for the pain, the usual local applications for the herpetic eruption, and massage and electrical treatment for the paralysis if this persists.

Pruritus Ani.—J. F. Montague (*International Journal of Medicine and Surgery*, 39:2) urges that this problem be considered primarily one of diagnosis and secondarily one of therapeutics. The first step in diagnosis is to examine the region locally for evidence of traumatic conditions which may result from abrasion, avulsion, maceration or compression. In addition to traumatic causes however, there may also be infective causes of a bacterial or parasitic nature, and these latter will generally be found to be the causes of direct pruritus. Investigation cannot cease however with the terminal three quarters of an inch of the anal canal, for certain conditions above this area or in neighboring organs are likewise capable of inducing pruritus indirectly. Thus the author reports one case in which examination revealed an ovarian cyst, upon removal of which the pruritus disappeared without any local treatment; another in which overdistention of the seminal vesicles was found to be the cause of the itching; and a third in which the pruritus proved itself a symptom of a carcinoma of the sigmoid colon. Local treatment of pruritus therefore is usually without results, and tragically so in cancer cases.

With the diagnosis of causative factors made therapeutics become a relatively easy matter, since there are happily at our disposal tried and proven therapeutic material and methods. Thus, if traumatic factors are at work, we apply protective ointments or mild antiseptic lotions combined with the use of pruritus vaccine in cases showing a low-grade infection of the skin. If extensive fibrotic changes have occurred, our undercutting operations will be found of value. In the presence of pathological conditions such as condyloma, these must of course be dealt with.

Finally, in cases due to visceral disease we are confronted with the duty of treating the cause as well as the symptom. In every case we should know the causative factors. Just as in the case of a general physical examination we urgently insist upon the importance of a rectal examination so now I insist with equal emphasis on the importance of a general physical examination in every case of pruritus ani, vulvæ and scroti.

Etiology and Treatment of Infantile Eczema.— A. M. H. Gray (*British Journal of Dermatology and Syphilis*, April, 1926) confines his remarks to the facial eczema of infants, and he divides them into three types: 1, Those which commence on the cheeks or forehead, the primary facial type; 2, those which begin on the scalp, and 3, those which occur in association with a general eczema starting somewhere other than on the face or scalp, as in the napkin region.

The primary facial type usually commences as an itchy patch on the cheeks, less commonly on the forehead. The earliest lesions appear to be of an urticarial or erythematous nature. The rash, when established, varies somewhat in distribution and character in different cases and friction appears to play an important part in its production. Itching is intense and spasmodic. Most of the infants are breastfed, and are fat and healthy looking.

The second type shows scurfy patches on the scalp, in the early stages in ring form, later as dark greasy crusts, which when rubbed or scratched lead to an inflammatory reaction.

The third type presents a similar condition, but here the eruption usually begins at a farther distance from the face, and the facial eruption forms part of a general eczematization.

In the primary facial cases there appears to be some specialized form of hypersensitiveness which is not present in the other types, in which there is simply that form of acquired hypersensitiveness which occurs in adult types of eczema. Most of the scalp cases are of an infective type, generally referred to as seborrheic. Facial eczema of infancy and asthma are frequently associated with neurodermatitis. Hay fever and cyclic vomiting are also found, suggesting some underlying diathesis, which often continues throughout life. There is no specific hypersensitiveness to food substance in facial eczema of infants, but these children, like other sufferers from eczema, are prone to give positive cutireactions to various proteins. The occurrence of the acute exudative type of eczematous inflammations of the skin is such a frequent association with an indigestion of fats and sugar that it indicates that the process in the skin and the process in the digestive tract probably have some etiological relationship. Contrariwise, the fact that the majority of infants presenting the same symptoms of indigestion described above do not likewise present a cutaneous reaction points to the inevitable conclusion that some underlying condition, probably systematic, which the eczematous infants possess, is lacking in the noneczematous individuals. A large number of these cases show symptoms of overfeeding, and they improve remarkably when the quantity of food is reduced. The indigestion may cause flushing and some itching of the face, and this may be the reason why the child starts rubbing its face. In the presence of the socalled exudative diathesis, this friction is sufficient to initiate the whole train of symptoms which are included in the primary facial type of this disease.

The treatment is concerned with stopping the friction, partly by restraint. Changes of temperature are avoided by keeping the child in an equable temperature and occlusive dressings. In nonseptic cases zinc paste is valuable; in septic cases starch and boric acid or flavine poultices are helpful. Crude coaltar is good in nonseptic cases. The only dietetic treatment is reduction of the food. Drugs are of little help. In the early scalp cases sulphur and salicylic acid ointment.

NEUROPSYCHIATRY

Hyoscine in Postencephalitis Lethargica: With Special Reference to Its Influence on Carbohydrate Metabolism.—P. K. McCowan, J. S. Harris and S. A. Mann (*British Medical Journal*, May 1, 1926) have found that hyoscine is of undoubted value in the Parkinsonism following encephalitis lethargica. This value is objectively demonstrated by its effect on the blood sugar curve, which is made to approximate to the normal type. This improvement is due to a specific action of the drug, though suggestion may be a subsidiary factor. This action of hyoscine is only temporary, but the prolonged use of the drug does not lead to tolerance or any deleterious effects. The hysterical element in this disease is probably due to lesion of the basal ganglia, and it is suggested that an anomalous lesion may account for similar symptoms in hysteria, chorea, etc. Though in the majority of cases the full benefit of hyoscine can only be obtained by hypodermic administration, there is no doubt that in many cases considerable benefit follows its oral exhibition.

Further Observations Upon Acrodynia.—A. E. Vipond (*British Journal of Children's Diseases*, April-June, 1926) describes the picture of acrodynia as follows:

There is marked photophobia and pain on handling of the limbs. The onset of the disease appears to be a nasal catarrhal condition. The child becomes irritable and cross. A definite rash appears on the body, often an erythema, a papular and even a pustular eruption, all due to a cutaneous irritation. A cold sweat covers the body and limbs (toxemia). The sympathetic system is involved. The hands and feet are cold and the skin presents a bluish red appearance. The interference with the circulation of the extremities is evidenced by bullæ at the tips of the fingers or a superficial gangrene. The locomotor system's involvement is shown by a pseudo-paralysis. Involvement of the sensory system is shown by peripheral neuritis with intense pain in the arms and legs. All the superficial lymph nodes are enlarged, especially in the axillæ and inguinal regions. There is a rapid loss of weight. The optic toxemia produces an intense irritability and the child buries its eyes in the pillow. There is mental irritability and unrest. The reflexes are difficult to obtain. The urine is scanty. The age of the patients is between eight and eighteen months. The duration of the disease is four to sixteen months.

Bacteriologically, the author was able to isolate a diplococcus from the enlarged glands in every case of acrodynia and he used an autogenous vaccine for every patient. Each patient was given 1 c.c. of this vaccine subcutaneously as a primary dose with slight reaction. This was followed by a marked improvement in three days. The author then gave 1.5 to 2:0 c.c. as a dose, and after three to six days more the extremities were nearly normal in color and tem-

perature. After three to four doses more of 4 to 5 c.c. of the vaccine the patients were practically cured in about three weeks' time. The dose of vaccine is rapidly increased until three to five c.c. are given. One c.c of the vaccine contains five hundred million diplococci. The author's success with this treatment has been universal.

Simple Test of Diagnostic Value in General Paresis.—In a series of 180 patients, the cerebrospinal fluid, suffering from various types of mental disorder, was examined, and the result of the acetic anhydride-sulphuric acid test was compared with the Wassermann reaction, the Lange colloidal gold curve, the amount of globulin, and the number of cells. The method of performing the test is as follows:

To 1 c.c. of cerebrospinal fluid in a small glass test tube add 0.3 c.c. of acetic anhydride. Shake the mixture well and then carefully add, drop by drop, 0.8 c.c. of concentrated sulphuric acid. The test tube is then held up against a white background and the presence of a lilac tint indicates a positive reaction; a brown-yellow or a red-yellow is noted if the reaction is a negative one. The lilac color may appear immediately after the addition of the sulphuric acid and disappear in a minute or so. Hence it is important to watch the cerebrospinal fluid as soon as the sulphuric acid is added, or a slightly positive case may be missed. Usually the lilac tint remains for at least five minutes.

The chemistry of this test is not fully understood, but it seems probable that it depends upon the presence of cholesterol in the cerebrospinal fluid.

As a result of these investigations, J. S. Harris (*British Medical Journal,* January 23, 1926) feels justified in drawing the following conclusions:

1. The acetic anhydride sulphuric acid test on the cerebrospinal fluid of cases of general paresis is positive in almost every case (ninety-seven per cent.), and hence is almost as reliable as the Wassermann reaction.

2. It is negative in almost every other type of mental disorder except certain cases of neurosyphilis (other than general paralysis of the insane).

3. It is a test which can be performed with great ease and rapidity and hence is of definite value to the clinician.

Treatment of Pain in Neuralgias.—S. Erben (*Wiener klinische Wochenschrift,* February 11, 1926) selects sciatica as the typical form of neuralgia. Heat applied over the sacral region is indicated in various forms, such as with the thermophore, sandbags, hot air, the Scotch douche, electric light, fango packs, or diathermy. They are all of equal value. In recent cases sweating procedures, such as steam baths, steam cabinets, light baths, followed by rub downs and a stay in a warm room for an hour are of advantage. If these measures do not bring relief within a week or two, stimulating applications to the skin of the sacral region, such as mustard, croton oil and liniments may be tried. Continuous application without blister formation is the ideal procedure. This treatment is continued for four weeks. The quartz light may also be used to induce erythema. Anodynes, such as the various coaltar preparations, may be necessary. If the symptoms are not relieved within four to six weeks, parenteral protein thereby is indicated. One may use the various milk and casein preparations or bacterial vaccines, both of which types of protein therapy act equally well. They should be injected intracutaneously. Infiltration of the area surrounding the nerves with physiological sodium chloride solution has been recommended. Some advise infiltration of the site of exit of the nerves. The patient should stay in bed for two weeks in recent cases. Walking barefoot on cold surfaces must be avoided; also all physical exertion and exposure to dampness.

Blood Sugar Studies in Encephalitis Lethargica.—P. K. McCowan, J. S. Harris and S. A. Mann (*Lancet,* April 17, 1926) found that in postencephalitis lethargica there is a definite derangement of carbohydrate metabolism as shown by the blood sugar curves. The levulose test does not support the contention that there is definite permanent hepatic insufficiency in postencephalitis lethargica. The majority of postencephalitis lethargicas show a hyperglycemia following glucose ingestion, markedly sustained in fifty per cent. of cases. The mental states of depression and stupor were associated with the most pronounced abnormalities of carbohydrate metabolism. No correlation could be found between the clinical pictures and the types of blood sugar curves obtained.

Although no diagnostic value can be placed on blood sugar curves in postencephalitis lethargica, the fact that the only normal curve was obtained in a patient who had recovered from his psychosis suggests that prognostic hyperglycemia found in all the cases is quite in keeping with the suggestion that encephalitis lethargica is of the nature of a toxemia.

Postoperative Psychosis.—G. Brown (*American Journal of Surgery,* 40:4) reports two cases of his own and reviews the literature, concluding that insanity follows a small percentage of operations under anesthesia. An insane heredity is present in some cases; when this is absent there is often a predisposition from toxemia, exhaustion or allied states. The incidence is slightly higher after operations on the genital organs. The sexes are affected in equal proportion. Insanity immediately following operation is due to the anesthetic. Insanity occurring several days after operation is due to the operation itself. Complete recovery usually takes place within three months. Some patients die within a few days and a few never regain normality.

Glossopharyngeal Neuralgia.—A. O. Singleton (*Annals of Surgery,* 83:3) recommends, for its simplicity and comparative ease of performance, the following operative

An incision was made along the anterior border of the sternomastoid muscle from the ear downward for three inches. The sternomastoid retracted outward and the linguofacial vein ligated and cut, and the posterior belly of the digastric isolated. The parotid gland was pulled forward. The stylohyoid muscle with the posterior belly of digastric were retracted downward and backward. The external carotid artery was seen behind and above these muscles, and it was pushed backward. The stylopharyngeus muscle was seen deep beneath the angle of the jaw and above the retracted stylohyoid muscle. Along the lower and anterior border of the stylopharyngeus the glossopharyngeal nerve was seen like a white thread. It was grasped and evulsed. The wound closed without drainage.

A Diagnostic Sign in the Early Ataxic Stage of Tabes.—J. Allison Hodges (*Virginia Medical Monthly,* April, 1926) describes the "stairs sign," which determines the patient's ability to descend properly a series of stair-steps, with the eyes open, but not directed to his feet, or in certain cases with the eyes closed, as one of the most delicate and definite tests of ataxia, often apparent before any other signs. The procedure tests at one time the afferent impressions from both the muscles and joints, deficiency of which is at the bottom of the ataxia of tabes. A short staircase is selected and the patient made to descend the stairs, abstracting his attention from everything else and looking straight before him. If the ataxia is advanced to any degree he cannot lift up his legs and put them down properly in descending, say, eight to twelve steps as easily as he could walk on a floor. If it is a case that does not manifest ataxia with the eyes open, the patient is made to close his eyes and descend a smaller number of steps; ataxia will then often be manifested to an unexpected extent. Nine out of twenty-three cases of early tabes showed ataxia by this test before it was demonstrable by other signs or before other positive tabetic reflexes and manifestations became apparent.

Phases of Neurosyphilis.—Abraham Myerson and Morris Yorshis (*American Journal of Syphilis,* July, 1926) emphasize the following points:

1. Neurosyphilis in severe form occurs very early in the course of syphilis, sometimes almost at the very start. These cases usually are of the mesodermic neurosyphilitic type, that is, the meninges are involved by a gummatous type of infiltration. These cases yield fairly readily to treatment, and potassium iodid is still of importance in their treatment.

2. The nervous system may be involved by the mesodermic changes later on in the course of syphilis, but in such cases there is usually parenchymatous involvement as well, and the prognosis is not very good.

3. It is to be emphasized that the Wassermann in the blood has, practically speaking, no relationship to neurosyphilis, and that where neurosyphilis is suspected, spinal fluid findings are imperative.

4. Certain cases of anterior horn involvement in neurosyphilis may be coincidental rather than have any causative relationship to the syphilitic process.

5. The authors believe that hypertension and neurosyphilis are probably too frequently associated to be merely coincidence. Even in old people, hemiplegia or cerebroarterial disease brings up the question of neurosyphilis as an important factor, and the spinal puncture as a routine in all cases of hemiplegia is strongly urged.

PEDIATRICS

Health Diagnosis in Children.—William R. P. Emerson (*American Journal of the Medical Sciences,* May, 1926) says that present schemes of health "chores," "teaching health," and so forth, are ill adapted to real needs and misleading in the impressions they actually make upon children. Intellectual knowledge has little or no permanent effect on health habits. The work of the school physician usually amounts to a mere "screening" out of a certain number of "deviations from the normal" without getting at causes or removing them. "Blanket," "shot gun" and panacea methods lead to waste of time, energy and funds much needed for constructive health work which takes account of actual causes and individual needs.

The basis of a program which deals with the entire period of growth is found in the present expert system of care worked out for the first year of infancy. Adequate provision for proper growth and development requires constructive health diagnosis which utilizes training in pathology without being overshadowed by it. This calls for adequate physical growth and social examinations to determine the causes of any failure to realize proper physical development and health.

A study of the results of thousands of these examinations show that the most common causes of physical unfitness are: 1, physical defects, especially nasopharyngeal obstructions; 2, overfatigue; 3, inadequate home or self control; 4, faulty food and food habits; 5, faulty health habits.

A similar study of health habits indicate that good health is found in those persons who practice good health habits and bad health is the accompaniment of faulty health habits. It is also evident that health habits and the state of healh do not improve with advancement in school or college grades. For instance, seniors in the medical school do not show better conditions than appear among college freshmen.

A satisfactory program takes account of this state of affairs and brings into operation the forces of: 1, The interest of the individual; 2, the home; 3, the school or college; 4, medical care, in order to remove causes of physical unfitness, bring the individual to a point where he is free to gain and afford him adequate training in proper health habits.

Application of this program has practically eliminated underweight and malnutrition from fourteen orphan asylums. It has been put into successful operation in many communities from Labrador to the Hawaiian Islands including cities in which a thousand or more children have been under care at one time with immediate and permanent improvement in weight and physical fitness. In various colleges the program has served to remove a large part of the physical unfitness among freshmen and upper classmen alike, demonstrating its efficiency throughout the whole period of growth and development.

Accurate and scientific methods are as necessary in diagnosing health as in diagnosing disease and the application of this principle is essential if we are to obtain permanent and satisfactory results.

Anorectal Prolapse in Children.—C. L. Heald (*Surgery, Gynecology and Obstetrics,* 42:6) describes a simple, bloodless operation for dealing with this pathology in children, when operation becomes, perchance, necessary. The intestinal tract is evacuated with milk of magnesia the day before, and by enema two hours before the operation.

Under ether or ethylene anesthesia the child is placed in the dorsal position, its legs being supported by an assistant. After the prolapsed bowel is reduced, a small bivalve rectal speculum is introduced, the blades spread laterally and the lower rectal mucosa swabbed with one per cent. aqueous solution of mercurochrome. A small rectal retractor on the anterior rectal wall may be used instead of the bivalve speculum.

The index finger is inserted and the notch or angle at the junction of the coccyx and sacrum is located.

A three inch, with a three eighth circle curved needle on one end of a coarse silkworm gut is passed along the finger in the rectum, inserted through the posterior rectal wall, through the notch at the sacrococcygeal angle and out through the skin posteriorly. A needle on the other end of the suture is passed in the same manner at the same point on the opposite side of the coccyx. A second, similar suture is placed one half inch lower, emerging on each side of the coccyx.

The sutures are tied rather tight over a folded gauze compress. The gauze may be kept dry by covering with rubber dam sealed to the skin with narrow strips of adhesive which are protected from moisture by painting with rubber cement.

The child is kept in bed for three or four days during which time bowel movements are prevented by small doses of paregoric twice daily. When it is desired to move the bowels an enema of three or four ounces of warm olive oil is given at night, to be retained, and milk of magnesia is given the following morning. The sutures are removed at the end of two weeks.

The efficacy of this method lies in the well-known tendency of silkworm gut to cut its way through the tissues, when under tension. As the suture slowly cuts through the rectal wall and perirectal tissues, healing by granulation follows in its track with the formation of firm connective tissue adhesions.

Primary Pneumococcus Peritonitis in Children.—A. H. Montgomery (*Surgery, Gynecology and Obstetrics,* 41:6) presents a case which he treated by immediate operation, commenting as follows:

There is probably a rather general idea among surgeons that the encysted cases should be watched until they are well localized. They may then be drained with a fair degree of safety. In the diffuse form the problem is more difficult. It is true, no doubt, as Kahn has stated, that we cannot drain the peritoneal cavity by any operative precedure. There is, however, in these cases a certain amount of intraabdominal pressure that tends to increase the absorption of toxins by the peritoneum. This intraabdominal tension can be relieved by a simple opening of the abdomen and the insertion of drainage. The operation should be as brief and nontraumatic as possible. The patient should then be put to bed in the Fowler position and kept at rest with morphine. Plenty of water must be given by rectal drip or subcutaneously. Hot packs may be used on the abdomen if they do not disturb the patient. In the diffuse form of primary pneumococcus peritonitis this combination of immediate simple operation, absolute rest, and strong supportive treatment has given us more favorable results than the supportive treatment alone. Under the latter only too many paients die unfortunately before any localization can take place. The operative treatment would seem to give them a somewhat better fighting chance.

Appendicitis in Infancy and Childhood.—S. J. Seeger (*Surgery, Gynecology and Obstetrics,* 42:4) finds that appendicitis is rare in the first two years of life. When occurring in children there is a tendency to early perforation, so that, with few exceptions, it should be treated surgically at whatever stage the patient is seen. The McBurney incision is the incision of choice because it gives rapid and bloodless access to the appendix and as a rule very little intraabdominal manipulation is required when this incision is used. Dehydration is an important factor and should always be considered in the preoperative and postoperative management of these children. It is best combated by the subcutaneous administration of fluids.

Etiology and Healing Process of Duodenal Ulcer in Melena Neonatorum.—Careful search in the literature reveals peptic ulcer in a larger number of cases of melena neonatorum, according to Roger L. J. Kennedy (*American Journal of Diseases of Children,* May, 1926), who has a case to contribute. It is believed by the author of the article that streptococci or diplococci must be the chief etiologic agents. Healing of duodenal ulcers begins very early and proceeds rapidly, so that under proper conditions the injury may be entirely repaired in a few days, an additional reason why they are so difficult to find. The rapidity of the healing of duodenal ulcer probably accounts for many of the recoveries from melena neonatorum.

The Prevention of Rickets.—May G. Wilson (*American Journal of Diseases of Children,* May, 1926) presents an interesting set of conclusions from an investigation of the therapeutic value of cod liver oil in rickets with infants in an outpatient clinic. Some of these conclusions are given below.

An intensive study of forty-seven infants, aged from two weeks, born in the winter of 1925, receiving daily doses of one, two, and three teaspoonfuls of biologically tested cod liver oil, showed the development of clinical rickets in sixty-

eight per cent. of the cases, as compared with seventy-six per cent. of the control series of thirty cases.

Ninety-seven per cent. of infants born in the summer, and ninety-one per cent. of infants born in the winter who received cod liver oil showed röntgenographic evidence of rickets.

The early age incidence of the development of rickets observed, indicates the necessity for measures of prevention or control to be instituted in the first month, particularly for babies born in the winter.

There did not seem to be any relation between the degree of rickets observed and the amount of cod liver oil received.

The concentration of calcium and inorganic phosphorus in the serum of infants under five months of age, with early clinical and röntgenographic evidence of rickets was found to be within the normal range.

A comparison of the degree and incidence of rickets observed in infants receiving and not receiving cod liver oil did not reveal any striking difference.

Infants receiving cod liver oil showed rickets that healed earlier than that of the control series.

The nature of the relation of cod liver oil therapy to the development of rickets, as observed in the studies, would seem to be one of control rather than of prevention.

Fetal Hydrops with Erythroblastosis.—Feeling the obligation of reporting an uncommon occurrence, Edward A. Bullard and Alfred Plaut (*Archives of Pediatrics,* May, 1926) relate a case of fetal hydrops with erythroblastosis. Seven years before this pregnancy the mother had given birth to a normal male child; the labor, though dry, was of only four hours' duration and ended in a spontaneous easy delivery. A second male child born five years later died on the third day apparently from hemolytic jaundice and pneumonia. A third child, a girl, died on the fourth day of life from cause unknown. An autopsy was refused. The mother who seemed a robust, vigorous normal woman was referred to Dr. Bullard during the last pregnancy.

Between the third month and delivery she had three attacks diagnosed as "Menière's disease, classical and unmistakable." The medical attendant advised no special treatment for this during pregnancy. Early in the seventh month the mother was delivered of a male child apparently dead several days. The weight was eight pounds. An extended autopsy led to the diagnosis given above.

Properties of Some Fabrics Used for Infants' Underwear.—Contrary to popular belief, knit cotton appears to be definitely warmer than wool, weight for weight, says Dr. Harold K. Faber in a communication on properties of some fabrics used for infants' underwear (*Archives of Pediatrics,* May, 1926). Silk is slightly less warm than wool.

Silk, cotton, wool, linen, birdseye cotton, and canton flannel are also compared, first as to ability to absorb body moisture in reasonable amounts depending on wetting properties and capacity for holding water; second, porosity, to permit passage of air to and from the skin; third, ability to withstand efficient cleansing, and preferably boiling, without rapid deterioration; and fourth smoothness of texture and surface, to prevent irritation of the skin.

Of the diaper material, birdseye cotton seems to be the best, although it has not as great a total capacity for water as canton flannel.

Appendicitis in Children under Five Years of Age.—Following an interesting and descriptive article Frederick Christopher (*American Journal of Diseases of Children,* April, 1926) concludes briefly as follows:

1. The most important factors in making the diagnosis of acute appendicitis in children under five years of age are elicitation of tenderness in the right lower quadrant, leucocytosis, rigidity in the right lower quadrant, and abdominal pain, named in order of their value.
2. The diagnosis may be extremely difficult.
3. Acute appendicitis occurring in patients under five years of age is characterized by rapid progress to perforation and gangrene, and has a high mortality.

Paratyphoid Fever in an Infant.—A case of paratyphoid fever in an infant, aged eighteen months, is presented by David Gingold and Harry Wexler (*American Journal of Diseases of Children,* April, 1926). The salient clinical features were persistent abdominal pain of three months' duration, marked secondary anemia, a relatively brief febrile period, and isolation from the blood of Bacillus paratyphosus B. It has been indicated by Stolkind and Lorey that paratyphoid fever in children is not so rare as the current literature and textbooks would suggest.

Uric Acid and Creatinin in the Urine of Infants.—S. Rougichitch (*American Journal of Diseases of Children,* April, 1926.) The uric acid excretion per twenty-four hours was measured in a series of twenty-two male infants. The diet of the infants being purin free, the amounts of uric acid found are regarded as of endogenous origin. A closely constant daily excretion was found for the individual. Measurements of urine creatinin in the same group of infants supported the conception of a close constancy of creatinin excretion in terms of the protoplasmic mass of the body. No relationship of creatinin excretion to differences in sleeping time or of muscular tonus was discernible.

Disseminated Tuberculosis in a Girl of Seven Years.—Jacob Sobel and J. Geiger (*Archives of Pediatrics,* April, 1926) describe a case of disseminated tuberculosis in a girl of seven where erosion of lymph gland into the right internal iliac artery resulted in a fatal hemorrhage. The child had been referred as an emergency case of appendicitis, and operation had been performed in spite of an atypical blood count. It was not until after the child had recovered from the operation that a complete examination suggested miliary tuberculosis.

The questions then arising are: 1, Can ileocecal tuberculosis be differentiated with positiveness in the pre-operative stage? 2. In the light of the history that this child had not been seriously ill prior to the acute onset which brought her to the hospital, is it probable that the intraabdominal tuberculosis was primary? 3. If this child had not been subjected to operation, would the course of the disease have been less rapid and less diffuse?

Death Following the Inhalation of Zinc Stearate.—Karl Shlaepfer (*American Journal of Diseases of Children,* April, 1926) reported as another fatality after the inhalation of zinc stearate in a child, aged seven and one-half months old. Death followed in thirty-four hours. Cyanosis and dyspnea characterized the clinical course of the illness, and a state of socalled acidosis was noted after the patient was admitted to the hospital, twelve hours before death. At necropsy the lungs were voluminous. Extensive areas of emphysema were separated from each other by small, scattered, atelectatic zones. The bronchioles contained plugs of zinc stearate and mucus which appeared as wormlike masses. Edema involved the alveoli, and the subpleural and interlobular connective tissue septums. The lymphatics throughout the lung were conspicuously dilated.

In spite of oxygen inhalation, persistence of the dyspnea may have been due to acidosis brought about by incomplete obstruction to the bronchioles with zinc stearate.

Ekiri: an Epidemic Infantile Diarrhea.—Japanese ekiri is thought by Keiji Kawata (*Archives of Pediatrics,* April, 1926) to be the same as cholera infantum and American summer diarrhea. It has exacted a high toll from children between two and six years of age but never affects nursing infants. Customary treatments of large and repeated doses of castor oil, with rectal infusion of lukewarm water, ice bag on the head, keeping the legs warm by hot water bottles, subcutaneous injection of saline fluid or Ringer's solution, and sometimes antidysenteric serum did not diminish the mortality.

The author studied the character of cramp and sudden weakening of the heart in the sickness. Remlinger and Dumas, of France, attested the presence of inflammatory swellings of the suprarenal glands in dysenteric corpses. Yasuda also detected the same change in ekiri. The disorder of the heart in diphtheria and other infectious diseases is traceable to the functional insufficiencies of the suprarenal glands.

In 1908 Pospischill, of Vienna, relieved heart weakness in diphtheria by using adrenalin. Taking these facts into consideration, as he says, the author began the application of adrenalin, together with rest and plenty of water and out of a total of eighty-one cases in the last seven years receiving the above treatment the mortality has been reduced to 7.4 per cent. During a four year period in the Fukuoka prefecture the mortality had been 59.7 per cent. while during a six-year period in the Gifu prefecture the mortality had been 82.4 per cent.

Syphilitic Endarteritis in Children.—From two cases of syphilitic endarteritis with gangrene, Harry M. Gilkey and C. C. Dennie (*American Journal of Diseases of Children,* April, 1926) conclude that syphilitic endarteritis involving the skin of extremities of children is more amenable to treatment than the ordinary type.

Hexylresorcinol in the Treatment of Pyelitis of Infancy and of Childhood.— A grateful substitute for renal pelvic lavage in young children is supported by William J. Scott and Veader Leonard (*American Journal of Diseases of Children,* February, 1926) who report favorable results in twelve cases with hexylresorcinol. The properties in its favor are several. It is a stable chemical compound, nontoxic in therapeutic doses, nonirritating to the urinary tract, bactericidal in high dilution in urine of any reaction, and is eliminated by the kidney after administration by mouth, unchanged, in sufficient concentration to impart active bactericidal properties to the urine. To obtain the best results, the authors recommend that the treatment should be persistent, the fluid intake should not be increased, and soda should be avoided during administration of the drug.

Splenic Diseases with Special Reference to Splenectomy in Children.—I. Russel Kuhn (*Archives of Pediatrics,* June, 1926) remarks that the spleen, even though its function may not even at the present time be fully understood, may best be considered as a filter placed in the blood stream under normal conditions to filter the red blood cells which disintegrate daily. It is the graveyard of the red blood corpuscles. Under pathological conditions, cells foreign to the circulation, as nucleated red blood cells, myelocytes, bacteria and other toxic agents, are also filtered out, the retention of which adds greatly to the increase of the size of the organ.

Splenectomy, generally speaking, is contraindicated in the leucemias and pernicious anemia. In Gaucher's disease and von Jacksch's anemia removal of the spleen should be undertaken only after the greatest deliberation. In many cases of Banti's disease, congenital family hemolytic jaundice and purpura hemorrhagica, splenectomy is definitely indicated. It is firmly established that the spleen is not necessary to life and the improvement in surgical technic has transferred the treatment of many of its diseases from the internist to the hands of the surgeon.

The Serum Prophylaxis of Measles by Means of Blister Fluid.—P. Modinos (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* March 18, 1926) notes that the great practical value of the serum prophylaxis of measles has hitherto been reduced by the difficulty of obtaining the serum. In a recent epidemic the expedient of using serum obtained, not by vein puncture, but by the application of a vesicant was adopted with complete success. Such serum, injected in three to five mil amounts, produced immunity in other children living in the same house with the patient and who had been in contact with him from the onset of the disease. It is much easier to obtain ten to fifteen or twenty mils of serum by blistering a child of six to ten years than to collect the same amount by vein puncture, which is difficult to carry out in small children. Each individual blistered will yield enough serum to immunize three or four persons. Another advantage of the procedure relates to the transmission of other diseases. Transmission of malaria is precluded by the author's earlier observation that the plasmodium never occurs in blister fluid, even during severe malarial paroxysms. As for tuberculosis and syphilis, not only are they more common in persons over twenty years of age than in children, but when they do occur in children their manifestations are so distinct as to be recognized at the first glance.

Double Inguinal Hernia in Infancy.—John T. Morrison (*Lancet,* March 27, 1926) maintains that by means of a one and a half inch incision along the line of the crest of the pubis efficient access may be obtained to either external abdominal ring. The incision is deepened till the surface of the aponeurosis is reached. A small double hook retractor is placed in the angle of the wound, and with quite moderate traction the region of the abdominal ring is exposed. An oblique incision through soft parts parallel to Poupart's ligament discloses the cord and its coverings. The operation can then be completed in the ordinary way.

After dealing with one side the operator exposes and treats the other exactly in the same way. By this maneuvre the time of the operation can be very materially reduced. In cases where it is desired merely to explore the opposite side this incision is particularly useful, and if no hernia be found the additional time taken is never more than a minute or two. Such a necessity may easily arise in infants in whom the presence of a hernia on the opposite side is easily overlooked. In conclusion, another advantage is the fact that the transverse suprapubic incision does not, as a rule, involve the use of any artery forceps, as neither superficial epigastric, nor superficial external pubic arteries need be divided. By this means further time saving is effected.

Diphtheria Following Tonsillectomy.—In connection with a case cited, Dr. Abraham Zingher (*American Journal of Diseases of Children,* January, 1926) says that diphtheria is likely to develop in a patient who has just been operated on for tonsillectomy and adenoidectomy, if the person is susceptible, as can be shown by a Schick test, and if he is a carrier of virulent diphtheria bacilli. While these three factors—absence of general immunity to diphtheria, presence of virulent diphtheria bacilli in the nose or throat and an operation, such as tonsillectomy—may not come together frequently, yet when they are present in the same person, diphtheria is quite certain to follow and the disease is likely to prove very dangerous, possibly fatal. The serious nature of the superimposed diphtheria arises from the danger of an early and rapid absorption of a fatal dose of toxin from the extensive raw surface, and the difficulty of recognizing the disease in the sloughing postoperative membrane until much valuable time has been lost and the opportunity for effective administration of antitoxin has slipped by.

Diphtheria may also readily develop as a result of a superimposed infection with diphtheria bacilli occurring in a susceptible person from one to two weeks after an operation on the tonsils and adenoids. At this time the wound has not completely healed, and the resistance of the mucous membrane to infection is still below normal.

CARDIOVASCULAR DISORDERS

The Cardiovascular Patient.—F. H. Laney and B. E. Hamilton (*Surgery, Gynecology and Obstetrics,* 42:2) direct attention to the method with which they have succeeded in rehabilitating patients with cardiovascular disease by indirect surgical measures. This consists in the removal of surgical burdens. The order of the greatest degree of accomplishment is removal of the toxic goitre, removal of large pelvic tumors, and removal of troublesome gall bladders.

In view of our low mortality with this type of cases, we urge that patients in this group who have coincident and burdensome surgical lesions, after proper consideration and preparation by rest, and partial or complete restoration of compensation, be operated upon and relieved of such lesions. It has been our experience that if there is cooperation between cardiologist, anesthetist, and surgeon, not only will the mortality in this seemingly hopeless group be surprisingly low, but the degree of restored ability in many cardiovascular cases will be strikingly high.

Cancer of the Heart.—R. Kapsinow (*Annals of Surgery,* Vol. 83:2) describes an unusual case of cancer of the heart, secondary to that of the breast. The distribution therein indicated that the growth was a retrograde invasion by direct continuity along the lymphatic channels of the anterior mediastinum to the base of the heart, and thence extending downwards through the hepatic channels involving the liver, gallbladder and pancreas. Judging from the size alone, the invasion of the heart preceded the abdominal growths by several months.

The Etiology of Heart Disease.—J. Edwin Wood, T. Duckett Jones, and Ray D. Kimbrough (*American Journal of the Medical Sciences,* August, 1926) have studied 623 cases of heart disease and made the following observations concerning race and climate. Organic heart disease is almost twice as common in the negro as in the white. Hypertension and syphilis are the chief etiological factors producing heart disease in the negro. Angina pectoris is less common in the negro than in the white, despite the fact that syphilis and arteriosclerosis are such important factors. Rheumatic heart disease is almost twice as common in Massachusetts as in Virginia, and this is the largest etiologic group in the former locality. Hypertension as an etiological factor in heart disease is somewhat more prevalent in Virginia than in Massachusetts, but comprises a large group in each instance.

Thyroid Operations and Goitre Heart.—J. S. Goodall (*International Journal of Medicine and Surgery*, 39:1) calls attention to the fact that in goitrous conditions the heart may be affected either mechanically, its action being embarrassed by the pressure of the enlarged thyroid on the great vessels and other structures at the root of the neck, or chemically by exposure to the influence of the toxic products of thyroidism. Both of these factors may, of course, operate together.

In many goitre cases one of the indications for operation is the protection of the myocardium, but in all the condition of the myocardium is the indication of the nature and extent of any operation.

Etiological Factors in Angina Pectoris.—Morris H. Kahn (*American Journal of the Medical Sciences*, August, 1926) discusses the etiological factors found in eighty-two cases. Almost twenty-five per cent. of the cases had their first typical attack before the age of forty years. The sex proportion was 65 males, 17 females. Tobacco and alcohol could not be excluded as contributory factors. Sudden excessive strain is the most important immediate factor preceding the attack, and its effect is more likely to be injurious in individuals engaged in moderate or sedentary occupations in whom the heart and aorta have not been trained to accept sudden strain adaptably. Acute infectious causes such as rheumatism and infected tonsils appear to be important in initiating vascular changes in the aorta and coronary artery area. In only three cases was syphilis a factor. Diabetes was present in ten cases of angina pectoris. There was no direct etiological relation between arterial pressure and the attacks. Gallbladder disease coexisted in three cases.

Treatment of Substernal and Precordial Pain.—Thomas F. Cotton (*Lancet*, April 17, 1926) states that the treatment of primary angina is that of heart failure. The patient must live within the limits of his exercise tolerance. Those activities, physical or mental, likely to provoke pain must be avoided. The daily life should be supervised and the patient should be allowed a sufficient amount of exercise and no more—all that he can do comfortably without pain. His occupation should be one that does not exhause or unduly tire the damaged myocardium. The diet should be an easily digested one, erring on the side of low caloric values; small meals slowly eaten, and well masticated, and taken with a minimum of fluid. It is important to rest after meals, for pain is easily provoked at this time. The general laws of hygiene should be rigidly obeyed. All foci of sepsis should be removed. Cold winds or exposure to dampness should be avoided. Sleep should be aided by suitable sedatives (bromides and chloral) if there is a tendency to insomnia.

When the anginal attack is severe and persists with the patient at rest amyl nitrite may relieve the pain. Morphine is well tolerated and can be given in large and repeated doses. Chloroform inhalations alone relieve some patients, especially when the anginal attack is caused by thrombosis or embolus in coronary vessels. Sodium nitrite, one grain, slowly dissolved in the mouth a quarter of an hour before beginning such exercise as walking, may prevent the onset of expected pain. Diuretin given in doses of ten grains over a prolonged period is useful. In a nervous patient it is helpful to add potassium bromide, ten or fifteen grains to the diuretin, and give it in a mixture. Potassium bromide may also be given with potassium iodide, ten grains, especially in hypertension cases. With a history or signs of syphilis, the usual mercurial treatment with potassium iodide over a prolonged period is indicated. Each year a course of arsphenamine treatment should be given. Diathermy, three treatments a week over a period of a month, is helpful in some cases.

There is no sound reasoning to support the surgical treatment of angina, but there is some evidence that benefit in primary angina has followed the Jonnesco operation of cervical sympathectomy. The results from other operations should await confirmation before being tried.

In secondary angina we must rely on removing the primary cause of the disease. The body should be explored for structural disease, sepsis, or some functional derangement; treatment should depend upon the result of such an examination. The same line of treatment as for primary angina is also indicated. It is important, for its psychological effect on the patient, to emphasize the secondary nature of the heart affection.

In neurasthenic cases it is important to stress the symptoms which can be explained on other grounds than those of cardiac disease, and to avoid emphasizing such symptoms as are cardiac in origin. If the symptoms can be attributed to the stomach the treatment then becomes one of diet, carminative mixtures, and a judicious use of sedatives. Many of the drugs recommended for the treatment of primary angina can be usefully given in cases of angina of this type.

Potency of Tinctures of Digitalis and Strophanthus Purchased at Various Points on the Canadian Market.—F. W. Ward (*Canadian Medical Association Journal*, April, 1926) says that the variation in potency of tinctures of digitalis and of strophanthus run parallel. Some samples are eighty per cent. below standard and others four hundred and thirty per cent. above standard. The variation between manufacturers' preparations is very marked, and the variation between samples of the same manufacturer is also marked. Before using, it is necessary to observe whether the tincture is marked as concentrated or not. From these results it must be concluded that tinctures of digitalis and strophanthus marked "B. P." as at present met with in Canada are very variable in their potency. The designation B. P. has no other significance than that the tinctures have been prepared in a certain way and is no criterion as to their potency. The designation U. S. P. may be some guide as to the potency, but this will depend on the reputation of the manufacturers and how honestly they have lived up to the U. S. P. standard. It is to be regretted that in no case is the standardization of these preparations as yet subject to governmental control in this or any other country.

Continued Adrenalin Treatment in Asthmatics with High Blood Pressure.—G. Etienne, G. Richard and F. Claude (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, March 18, 1926) discuss the case of an asthmatic with hypertension who used intramuscular injections of adrenalin to a total of 800 milligrams in the course of the year 1924. At the end of this time the blood-pressure had not only not increased but returned to normal. There was no evidence of atheroma on fluoroscopy of the aorta, and the patient's vegetative reactions continued to show a tendency toward vagotonic preponderance, in spite of the adrenalin. During 1925, adrenalin was further used to a total of 1,215 milligrams. Fluoroscopies showed no special opacity of the aorta. The blood-pressure remained fixed at the levels noted in the previous year, viz., 140 and 70 millimetres. Slight vagal preponderance continued. The patient was in excellent general health and had resumed an active life, which had not been possible previous to the use of adrenalin. This and other clinical observations made by the author as well as Ricaldoni, Maira and Münzer on asthmatics with hypertension treated by large, repeated doses of adrenalin show that there is no absolute contraindication to the use of this drug in high blood-pressure.

The Blood Cholesterin in High Blood Pressure.—G. Richard and J. Roesch (*Bulletin de l'Académie de médecine*, March 30, 1926) report a study of the relationship of the blood cholesterin to hypertension in eighty cases. In thirty patients with a systolic pressure between 150 and 200 millimetres of mercury, the average blood cholesterin was 2.06 grams. In twenty-four patients with a systolic pressure of 200 to 250 millimetres, the average was 2.12 grams. In twenty-six patients with a pressure of 250 or over, the average was 2.17 grams. Thus, there is a rise of cholesterin in hypertension, but it is too slight to warrant the view of a proportional relationship between the two. Similar considerations apply to the diastolic pressure. In thirty-four patients with the blood cholesterin normal or below two grams, the average blood urea was 0.41 gram. In forty patients with cholesterin between two and three grams the blood urea averaged 0.44. In six patients with cholesterin exceeding three grams, the blood urea averaged 0.38 gram. Thus, while hypercholesterinemia is very often associated with Bright's disease, the blood urea does not seem to govern the blood cholesterin; indeed, as Chauffard, Laroche and Grigaut have maintained, the cases with the most pronounced nitrogen retention are those which show the least increase in blood cholesterin. A noteworthy feature was that all the patients who suffered from pronounced chronic headache showed a high blood cholesterin with relatively low blood urea and blood pressure.

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Medicolegal Notes.

EMPLOYEE HAS BURDEN OF PROOF OF FAILURE OF HOSPITAL TO GIVE PROPER TREATMENT UNDER CONTRACT WITH EMPLOYER

A hospital contracted with a coal mining corporation to furnish the company's employees with necessary hospital treatment for injuries received in the course of their employment, for a consideration paid by each of the employees. An injured employee was immediately taken to the hospital, after his hips and pelvis were crushed when he was caught between the bumpers of two coal cars. He was treated and operated on, some of the broken bones were removed, and his wounds dressed. After about 30 hours treatment, he was removed by his father and friends to another hospital, where he was treated until he recovered and was discharged. He sued the first hospital to recover the amounts he paid the second, under West Virginia Code, section 2, c. 71, on the ground of breach of his contract with the defendant. The West Virginia Supreme Court of Appeals held, Meadows v. McCullough, 132 S. E. 194, that the burden was on the plaintiff to prove that the defendant hospital did not furnish to him such necessary professional treatment in the said hospital as was contemplated by the contract, and such as is ordinarily furnished at hospitals of like kind and character in the same community, acting under like circumstances, and, further, that such failure was not the result of the plaintiff's act. It was held that a verdict should have been directed for the defendant, there being no evidence to show failure to give the plaintiff proper treatment under the contract.

LIABILITY FOR MEDICAL SERVICES TO PRISONER IN CUSTODY OF SHERIFF

In an action by a physician and surgeon owning and operating a hospital, for professional services rendered and hospital expenses incurred for a prisoner at the request of the sheriff, against the sheriff and the board of county commissioners, the North Carolina Supreme Court held, Spicer v. Williamson, 132 S. E. 291, that, under the general rule that a mere request by a person to a physician to render services to another to whom the person making the request is under no obligation to furnish medical care raises no implication of a promise to pay for the services, a sheriff or other officer is not under a legal obligation to provide medical attention for a prisoner in his custody for payment of which he is personally liable. Whether the sheriff expressly agreed to pay plaintiff for his services to the prisoner was a question for the jury. The burden of proving such an express agreement was on the plaintiff.

It is held to be the duty of the board of commissioners of a county in North Carolina, under Comp. St. §§ 1317, 1346, 1347, to provide for necessary medical attention to a prisoner confined in the county jail, whether the prisoner has been committed to jail as a result of a preliminary trial or upon a final judgment on his conviction of a violation of law. This duty is owing to a person, lawfully in the sheriff's custody, awaiting a preliminary trial and confined in jail because of his inability to give bond for his appearance at the trial, and the duty is extended to a person in the lawful custody of the sheriff, who is unable because of the condition of the prisoner, to take him at once to jail. The fact that the board had not authorized the sheriff to request the plaintiff to render professional services to the prisoner did not, under the facts of the case, relieve the board of liability for the reasonable value of the services. Ordinarily, the sheriff should report the condition of the prisoner to the board before calling in a physician. In an emergency, however, such as existed in this case, a shot wound received while resisting arrest, the sheriff may, it was held, without previous authority from the board, procure necessary attention for the prisoner, and the board will be liable for the reasonable charge for such services as may be rendered to the prisoner at the sheriff's request. Whether or not the services rendered and hospital expenses incurred were reasonably necessary in view of the prisoner's condition while in the sheriff's custody was a question for the jury.

COUNSEL CANNOT TESTIFY AS TO CORRECTNESS OF X RAYS

The Texas Court of Civil Appeals holds, Lumbermen's Reciprocal Assn. v. Wells, 283 S. W. 208, that counsel for plaintiff in a personal injury case was incompetent to testify that x ray pictures of plaintiff's injured leg and ankle, offered in evidence and exhibited to the jury, were correct and that the doctor taking them "was a competent man to use the scientific method of taking this character of pictures, and to know that he was properly equipped for such business," there being nothing in the record to indicate how counsel could know these facts.

UNAUTHORIZED RAILROAD CLAIM AGENT CANNOT BIND COMPANY FOR MEDICAL SERVICES TO EMPLOYEE

In an action against a railroad company for professional services rendered and medicines furnished to an employee of the company, the theory of the plaintiff's case was that the company was obligated to pay the doctor's bill by the words and conduct of its claim agent. The Georgia Court of Appeals held, Copeland v. Southern Ry. Co., 133 S. E. 271, that, since neither the evidence for the plaintiff, nor that for the defendant, nor both together, showed that the claim agent had authority to bind the company to pay the bill in question, the plaintiff could not recover.

PHYSICIAN'S TESTIMONY AS TO PLAINTIFF'S CONDITION BEFORE AND AFTER INJURY ADMISSIBLE

The Kentucky Court of Appeals holds, in an action for personal injuries, Chesapeake & O. Ry. Co. v. Hanson, 283 S. W. 86, that the testimony of plaintiff's family physician that he had not treated her prior to the accident, but that since then he had treated her for painful menstruation, although he was unable to say whether or not this was the result of the accident, was admissible, although there was nothing to show that this ailment was the result of the injury, in view of the fact that it was not made the basis of a recovery for permanent injuries, but was a statement of a physical fact regarding plaintiff's condition before and after the injury and part of the history of the case.

IMMUNITY OF MUNICIPAL HOSPITALS FOR LIABILITY TO INJURED EMPLOYEES

The Kentucky Court of Appeals holds, Zachert v. City of Louisville, 282 S. W. 1071, that the city of Louisville, being clothed, by authority of the state Constitution and the provisions of its charter, with the power to erect, establish, and maintain hospitals, almshouses and other buildings for the preservation of the public health, is not responsible to persons injured because of the misconduct or negligence of its agents and employees in a hospital which it has established for charitable purposes, whether the person injured be a patient of the hospital or an employee therein. The action was by a servant of the hospital for injuries to her face, head and other parts of her body caused by the explosion of the boiler or drum of a steam sterilizer which she claimed resulted from the opening by her of the boiler door by order of a nurse whom she was attending as helper. The negligence claimed was in permitting the boiler to become overcharged and failing to shut off the steam.

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Miscellany.

Longevity of College Athletes.—In cooperation with the Presidents' Committee of Fifty on College Hygiene, the Metropolitan Life Insurance Company has begun an investigation into the effect of college athletics upon the life expectation of students who engage in them. Other organizations which are participating are the American Students' Health Association, the National Collegiate Athletic Association, and the Society of Directors of Physical Education in Colleges. The subsequent life histories of from eight to ten thousand college athletes, more particularly "letter men," who were members of the class of 1905 and prior years will be studied. The sports to be covered are football, rowing, track, baseball, lacrosse, cross country, and hockey. Thus far, the following universities and colleges are participating in the inquiry: Yale, Princeton, Cornell, University of California, University of Michigan, University of Chicago, University of Pennsylvania, and Amherst. Other institutions are expected to participate, but the inquiry will necessarily be restricted, as the majority of colleges and universities did not have, as early as 1905, well organized athletic departments.

There has been considerable discussion, both within and without university circles, on the effect of college athletics upon life expectancy. Opinion differs widely, and it is indeed fortunate that the subject is now to be studied intensively and scientifically.

Dr. Thomas A. Storey, director, department of hygiene, College of the City of New York, is executive secretary of the Presidents' Committee of Fifty, and is sharing with Dr. L. I. Dublin, statistician of the Metropolitan Life Insurance Company, in the direction of this investigation. Inquiries regarding this study and offers of cooperation from other university departments having records of their athletes available for study will be gladly received by either of the directors.

The Carnegie Foundation for the Advancement of Teaching is also interested in this project as a part of the Foundation's study of school, college and university athletics, in the United States.—*Statistical Bulletin.*

The Osaka (Japan) Sanitation Exhibition.—With a view to increasing the hygienic knowledge of the people and improving medical and sanitary supplies, a sanitation exhibition will be held in Osaka, Japan, from July 15 to August 30, 1926. The exhibition will be held under the auspices of the Federation of Sanitary Associations of Osaka, and with the support of the home office, the Osaka prefecture, and the Osaka municipality.

The exhibits will include all kinds of articles pertaining to sanitation and are divided into two classes or departments: Department A will consist of exhibits sent from Government and public institutions, and department B will include medical and sanitary supplies in general.

Official organizations, public institutions, and manufacturers who desire to display articles at this exhibition should send in their application at once, together with a list of exhibits, stating the number, size, value, and weight, in order that suitable space may be reserved.—*Public Health Reports,*

INTERESTING INVESTIGATIONS MADE AT THE HORACE GREELEY LABORATORY

April and May 1926, and by Dr. L. H. Cornwall, Bacteriologist New York City

36 new toothbrushes were purchased, placed in separate test tubes and sterilized.
Brushes were given to as many people. After cleaning the teeth each brush was rinsed in water and returned to its container.
Into each container was poured 10 cc of sterile 0.9 per cent saline (covering bristle end of brushes) and the containers returned to the ice-box for 24 hrs.
Brushes were then shaken out in the saline and removed from the tubes. Tubes were then well shaken and .01 of a cc of the contents of each was planted on a tube of Loeffler's blood serum and the latter incubated for 24 hours.
The saline remaining in the 36 tubes was then transferred to as many centrifuge tubes and centrifuged for five minutes at 2200 revolutions. Smears were made of the sediment and stained with methylene blue. Identification of organisms was made from their morphology in the above mentioned smears and in smears from cultures and replants, and peculiarities of growth in replants upon various media. Altogether some 500 cultures and 600 smears were made and examined.

FINDINGS IN CONDENSED FORM

36 (all) of the brushes showed Staphylococci, aureus or albus or both,
31 of the same brushes showed Pneumococci,
19 showed streptococci, non-hemolytic.
1 showed streptococci hemolytic.
11 showed Vincents angina.

10 brushes used only five days were examined by Dr. Cornwall for organic matter. It was demonstrated in every case.
12 brushes of diphtheria cases were examined. 9 showed diphtheria bacilli. One week later 8 of the brushes still showed diphtheria bacilli.

As a result of these findings how can we reconcile ourselves to the use of the toothbrush for practicing MOUTH HYGIENE.

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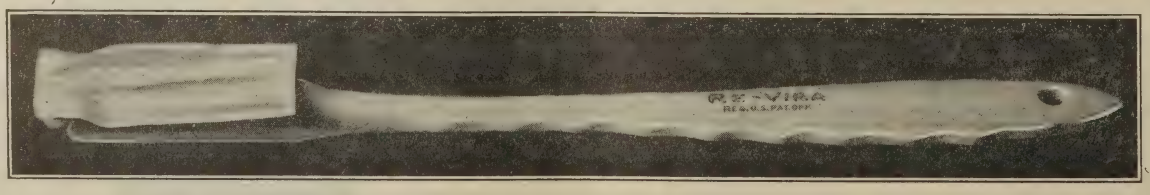

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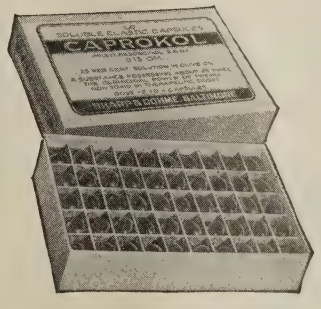

LITERATURE SENT UPON REQUEST

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The Canadian Med. Assoc. Jour. 1925, Vol. XV, p. p. 787-788.
Jour. of Urology, Aug. 1925, Vol. XIV, No. 2.
Jour. A. M. A., Dec. 12th, 1925, Vol. 85, No. 24, p. p. 1855-1861.
American Journal Diseases of Children, Vol. 31, No. 2 Feb. 1926.
Jour. A. M. A., March 6th, 1926, Vol. 86, No. 10, p. p. 668-670.
Minnesota Medicine, April 1926, Vol. 9, No. 4, p. p. 156-160.

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Activities of the Rockefeller Foundation.—A review of the activities of the Rockefeller Foundation in 1925.

During 1925 the Foundation in spending $9,113,730 through its departmental agencies, the International Health Board, the China Medical Board, the Division of Medical Education, and the Division of Studies, engaged in the following activities:

1. Aided the governments of eighteen countries to combat hookwork disease; 2, gave funds to the budgets of organized rural health services in 220 counties in twenty-six American states and in eighteen districts in Brazil, Poland, Czechoslovakia, Austria, and France; 3, took precautionary measures against yellow fever in Salvador, Guatemala, Nicaragua, and Honduras; 4, continued to work with Brazil in freeing its northern coast from this disease; 5, sent a yellow fever commission to the West Coast of Africa; 6, helped to show the possibilities of malaria control in twelve American states, and in Brazil, Argentina, and Italy; 7, shared in the development of professional training of public health officers at Harvard University and the University of Toronto and in schools and institutes in London, Copenhagen, Prague, Warsaw, Belgrade, Zagreb, Budapest, Trinidad, and Sao Paulo; 8, contributed to the progress of medical education at Cambridge, Edinburgh, Copenhagen, Brussels, Utrecht, Strasbourg, Beirut, Singapore, Bangkok, Sao Paulo, and Montreal; 9, provided emergency aid in the form of literature and laboratory supplies for 112 medical centres in Europe; 10, maintained a modern medical school and teaching hospital in Peking with 164 students and fifty-five teachers; 11, aided two other medical schools and nineteen hospitals in China; 12, helped to improve the teaching of physics, chemistry, and biology in three Chinese and seven foreign institutions in China and in the government university of Siam; 13, supported nurse training courses in Peking Union Medical College, Yale University, Vanderbilt University, and the George Peabody College for Teachers, and contributed to nursing education and service in Brazil, France, Yugoslavia and Poland; 14, provided current funds for an institute of biological research in the Johns Hopkins University; 15, assisted departments at Yale and Iowa State universities engaged in biological and mental research, and aided the Marine Biological Station at Pacific Grove, California; 16, provided, directly or indirectly, fellowships for 842 men and women from forty-four different countries, and financed the travel of fifty other persons either in commissions or as visiting officials and professors; 17, contributed to the League of Nations' international study tours or interchanges for 128 health officers from fifty-eight countries; 18, continued to aid the League's information service on communicable diseases; 19, made surveys of health conditions, medical education, nursing, biology, and anthropology in thirty-five countries; 20, lent staff members as advisers and made minor gifts to many governments and institutions; 21, assisted mental hygiene projects both in the United States and Canada, demonstrations in dispensary development in New York City, and other undertakings in public health, medical education, and allied fields.

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Graves—*Gynecology*, 2nd Ed., 1921.

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A Symposium on Cancer.—From September 20th to 24th the American Society for the Control of Cancer will hold a symposium on cancer at Lake Mohonk, Ulster County, New York. The meeting will be attended by about one hundred Europeans and Americans of foremost professional standing in relation to the cancer problem.

The names of the Europeans and the titles of the papers they will read are as follows:

ENGLAND

Sir John Bland-Sutton, president of the Royal College of Surgeons: The Value of Coordinated Effort Among Surgeons, Pathologists and Others in the Control of Cancer.

Dr. W. Sampson Handley, honorary surgeon, Middlesex Hospital: The Earliest Diagnostic Signs of Cancer Visible to the Patient, to the General Practitioner of Medicine, and Detectable by Investigation at Clinics and Hospitals.

Dr. Archibald Leitch, director of Research Institute, Cancer Hospital, London: Practical Value of Researches Into Contributory Causes of Cancer.

Dr. James A. Murray, director of the Imperial Cancer Research Fund: Some Notable Contributions to the Knowledge of Cancer.

FRANCE

Dr. Léon Bérard, professor of surgery, University of Lyons: The Organization and Practical Working of the Centres Against Cancer in France.

Dr. Henri Hartmann, professor of surgery at the University of Paris: The Objects and Methods of the Organized Movement Against Cancer in France.

Prof. T. Marie, director of the Anticancer Centre of Toulouse: The Need of Special Institutes for the Investigation and Treatment of Cancer, as Compared with Other Methods of Dealing with Cancer Patients.

Dr. Claude Regaud, director of the Pasteur Laboratory of the Radium Institute, Paris: The Value and Proper Equipment of Institutions for the Treatment of Cancer by Radium and X Rays.

Prof. Gustav Roussy, director of the Laboratory of Pathological Anatomy, University of Paris: Research in Relation to Prevention and Treatment.

GERMANY

Dr. R. Bierich, director of the Institute of Cancer Research in Hamburg: The Organized Movement for Cancer Control in Germany.

SWITZERLAND

Dr. Charles DuBois, president of the Swiss National League for the Control of Cancer: The Campaign Against Cancer in Switzerland.

DENMARK

Dr. Johannes Fibiger, director of the Pathological Anatomical Institute and Rector of the University of Copenhagen: Cancer Control in Scandinavia.

BELGIUM

Prof. J. Maisin, director of the Cancer Institute of the University of Louvain: The Organized Movement for the Control of Cancer in Belgium."

HOLLAND

Prof. H. T. Deelman, director of the Institute of Pathology of the University of Groningen: The Relative Mortality from Cancer Among Different Races.

Prof. William M. deVries, president of the Netherlands Cancer Institute: The Prevalence of Cancer as Revealed by Mortality Returns and at Autopsy.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

A BIPOLAR THEORY OF LIVING PROCESSES. By George W. Crile. New York: The Macmillan Company, 1926. Pp. 405.

RECTOSCOPIE ET SIGMOÏDOSCOPIE. Par R. Bensaude, M.D. Paris: Masson et Cie, 1926. Pp. 178.

TROUBLES DES ÉCHANGES NUTRITIES. PHYSIOLOGIE—PATHOLOGIE—THERAPEUTIQUE. Par Ch. Achard. Tome II. Paris: Masson et Cie, 1926. Pp. 1220.

PEDIATRICS. By Various Authors. Edited by Isaac A. Abt, M.D. Volume VIII. Philadelhphia and London: W. B. Saunders Company, 1926. Pp. 1102.

MALADIES INFECTIEUSES (Premiere Partie). Precis de Pathologie Médicale. Par Fernand Bezançon et Andre Philibert. Tome I. Paris: Masson et Cie, 1926. Pp. 539.

A MANUAL OF NORMAL PHYSICAL SIGNS. By Wyndham B. Blanton, M.A., M.D. St. Louis: The C. V. Mosby Company, 1926. Pp. 215.

AN INTRODUCTION TO THE STUDY OF X RAYS AND RADIUM. By Hector A. Colwell and Cecil P. G. Wakeley. New York: Oxford University Press, 1926. Pp. 203.

COLLECTED PAPERS BY THE STAFF OF THE HENRY FORD HOSPITAL. First Series 1915-1925. New York: Paul B. Hoeber, Inc., 1926. Pp. 634.

THE COMPARATIVE ANATOMY, HISTOLOGY, AND DEVELOPMENT OF THE PITUITARY BODY. Biological Monographs and Manuals, No. 6. By G. R. de Beer, M.A., F.L.S.

CLINIQUE MÉDICALE DES ENFANTS. TROUBLES DE LA NUTRITION ET DE LA CROISSANCE. P. Nobécourt. Paris: Masson et Cie, 1926. Pp. 404.

THE PROCEEDINGS OF THE CHARAKA CLUB. POST MULTA VIRTUS OPERA LAXARE SOLET. New York: Paul B. Hœber, 1925. Vol. VI. Pp. 145.

PEDIATRICS. By Various Authors. Edited by Isaac A. Abt, M.D. General Index to Volumes I to VIII. Philadelphia and London: W. B. Saunders Company, 1926. Pp. 249.

MALADIES INFECTIEUSES DUES A DES PARASITES AUTRES QUE DES BACTERIES. Précis de Pathologie Médicale. Par Fernand Benzançon et A. Philibert. Tome II. Paris: Masson et Cie, 1926. Pp. 646.

RECHERCHES SUR LE MÉCANISME DE L'ACTION DE LA STRYCHNINE SUR LE SYSTÈME NERVEUX CENTRAL. (Memoires Couronnes et Autres Memoires, Volume XXII, Number 8.) Para: F. Bremer et P. Rylant, 1926.

EMERGENCY SURGERY. THE MILITARY SURGERY OF THE WORLD WAR ADAPTED TO CIVIL LIFE. By George de Tarnowsky, M.D., F.A.C.S. Philadelphia and New York: Lea and Febiger, 1926. Pp. 718.

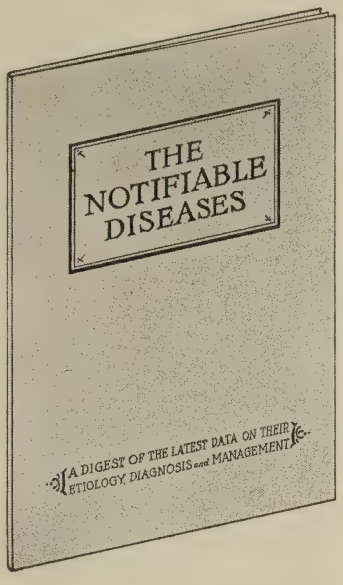
THE DIAGNOSIS, TREATMENT AND END RESULTS OF TUBERCULOUS DISEASE OF THE HIP JOINT. By George Perkins, M. Ch. Oxon., F.R.C.S. Eng. New York: Oxford University Press, 1926. Pp. 118.

THE PRIVATE PRACTITIONER AS PIONEER IN PREVENTIVE MEDICINE (Annual Oration of the Hunterian Society, 1926). By George Newman, M.D. New York: Oxford University Press, 1926. Pp. 47.

L'INSULINE. I: SA DÉCOUVERTE. SA FABRICATION. SA NATURE. II: SES PROPRIÉTÉS PHYSIOLOGIQUES ET SON MADE D'ACTION. III: SON UTILISATION THÉRAPEUTIQUE. Par Emile Aubertin, M.D. Paris: Librairie Octave Doin, 1926. Pp. 490.

THE NEWGATE CALENDAR. Comprising Interesting Memoirs of the Most Notorious Characters Who Have Been Convicted of Outrages on the Laws of England. With Speeches, Confessions, and Last Exclamations of Sufferers. Introduction by Henry Savage. Hartford, Conn.: Edwin Valentine Mitchell, 1926. Pp. 263.

The Notifiable Diseases



Their etiology, transmission, incubation period, diagnosis, duration, quarantine restrictions, and terminal disinfection.

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I. Burney Yeo, M. D., *Professor of Therapeutics, King's College, London, in the well known work, "Food in Health and Disease":* "In a very severe case of Typhoid, under our care in King's College Hospital, with most alarming and profuse hemorrhage, we carried out a rigorous method of feeding with remarkably satisfacory results. The clear indication was to keep the intestines absolutely at rest and to allow no debris of food to pass through to excite peristaltic action. It was necessary therefore to give food which, while adequate to sustain and strengthen the patient, should be wholly absorbed in the stomach and upper part of the small intestines. To give milk might be fatal. For our purpose we selected VALENTINE'S MEAT-JUICE, giving one teasponful in a wineglassful of cold water every three hours, with one teaspoonful of brandy. The patient's diet was absolutely limited to these quantities for seven days. The plan answered admirably and the patient made a perfect recovery and fairly rapid convalescence."

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DIRECTIONS. Dissolve one teaspoonful of the Preparation in three tablespoonfuls of cold or warm water; boiling water changes the character of the preparation

Miscellany.

Flying Doctors.—The distinguished specialist who flies once in a while to a rich, importunate, and distant patient is already familiar to most of us. Less is known of the systematic use of aeroplanes for the sick and injured, although the ambulance aeroplane has already done good service. It was first used by the French Army in Morocco under Marshal Lyautey. In May, 1921, twenty aeroplanes, each carrying two stretchers, were sent to Morocco, and proved so successful on evacuating the wounded that since then many more have been employed. The Swedish Red Cross has done pioneer work in using an ambulance aeroplane to transport the sick from its sparsely populated northern areas to the nearest hospital, often over one hundred miles distant. In 1923 it applied to the Government for a subsidy to purchase an aeroplane for this purpose, and the Government agreed to share the expense of purchase. The machine is piloted by military airmen, and the Red Cross defrays the running expenses. Many lives have been saved by this means. One patient, suffering from hemorrhage and living in a very isolated part, was transported in an hour and a half to the nearest hospital at Baden, whither the journey by sledge would have taken at least twenty hours. Once the idea had taken root its corollary became evident. If an aeroplane can take the patient to the doctor it can also take the doctor to the patient. This second lifesaving use for the aeroplane is particularly applicable to Australia, with its average population density of only 1.83 persons per square mile, and in the April number of *The World's Health* H. C. Loeffler tells how the aeroplane is helping solve the problem of providing medical aid to distant settlers in that country. A single doctor at Darwin has a practice extending over an area ten times that of Great Britain, but the condition of roads and the absence of bridges no longer prevent him from reaching patients far off in the Bush. The Australian Inland Mission, which has already been instrumental in supplying nursing homes to the "Outer Bush," is now proposing to extend its activities to supplying doctors by aeroplane. It has therefore mapped the central part of the continent into circular districts, each with a radius of two hundred miles which could be covered by flying doctors when necessary. As a first step, the Mission proposes to develop a wireless service and to educate bushmen in its use. Meanwhile the aeroplane plan has been submitted to the National Commission on Health, and it is hoped that it will meet with this body's approval. The plan includes utilization of the regular mail aeroplane services to furnish personnel and equipment, under contract, for carrying these flying doctors.

In England communications are so rapid and distances so short that little use has been made of aeroplanes for medical purposes in civil life; but in the United States, if ordinary means of transport fail, the Red Cross can call on the aeroplanes of the Army, the Navy, and the Postal Services to send help to the victims of distant railway accidents, mine explosions, and epidemics. Outbreaks of diphtheria in remote districts have been dealt with effectually by sending doctors, nurses, and serum in a few hours instead of days. Aviation has also helped in the prevention of disease; for in Louisiana aeroplanes have been used to destroy mosquito larvæ by spreading Paris green over the surface of large lakes. All over the world there are rescues and reliefs recorded which recall adventures told by writers in boys' books which seemed fantastic two or three decades ago. In Switzerland an aviator dropped food down to a party cut off on a mountain side; in Sweden some fishermen were saved from starving on an island when their communications were cut off by the breaking of an ice bridge; in Nigeria the wife of a British official was bitten by a mad dog and—by courtesy of the Governor of French West Africa, who sent her an aeroplane—was transported 1300 miles to the Pasteur Institute at Dakar, which she could not otherwise have reached for a month. The aeroplane, it is evident, has its record of salvation as well as of destruction, and in the face of so rapid an advance it is not surprising to learn that in Colombia (South America) a hospital is being built with a flat roof on which, it is hoped, the regular air ambulances will alight with their cargo.—*Lancet*, April 17, 1926.

Pittsburgh Plans Hospital and University Merger.—Plans have been made for a consolidation of the Presbyterian Hospital of Pittsburgh with the medical school of the University of Pittsburgh, involving the erection of a $4,000,000 hospital on property adjoining the new Children's Hospital on Fifth Avenue, according to the *National Board Bulletin*.

The new hospital will have the same relationship with the University as the Presbyterian Hospital of New York bears to Columbia University, with the University directors nominating the hospital staff. The property for the new structure is given the hospital by the University, the site being known as the Kirk Porter property. The hospital will retain its present affiliations, and the consolidation involves few changes in its established plans. The proposed building will provide accommodations for more than six hundred patients.

Village Doctors More Numerous But Work Harder Than City Colleagues.—Village communities have only about two thirds as many physicians in proportion to the number of inhabitants as have medium sized cities, according to figures just made public by the Institute of Social and Religious Research, New York, in a report by Dr. C. Luther Fry, in which are presented the results of an interpretative study of previously unpublished 1920 census data for 177 agricultural villages selected to be as being as nearly representative as possible of the entire United States.

But the villages themselves, as distinguished from the "village communities," have proportionately more physicians than the cities have. The Institute's computations for the different regions show that per 1,000 inhabitants the Middle Atlantic villages have 2.9 physicians and the cities 1.6, the Middle West villages 2.8 physicians and the cities 2.2, and the Southern villages 3.6 and the cities 2.1, while the Far West villages have 2.8 physicians and the cities 2. per thousand inhabitants.

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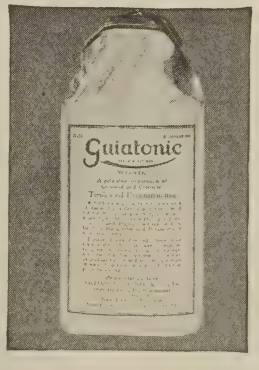

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"Of course, the large villages have more physicians than the small centres have," says the report, "but the increase does not keep pace with growth of village population, with the result that the proportionate number of doctors decreases as the villages become larger.

"These figures do not mean, however, that villages have a larger number of doctors in proportion to the population they serve. It is a known fact that village physicians serve open country inhabitants as well as villagers. The first hand studies of the Institute's field workers found that almost no doctors live in the open country areas adjacent to villages. Open country inhabitants are therefore compelled to turn to villages when they want medical attention.

"In every region the cities have from one third more to nearly twice as many doctors as have 'village communities.' These differences are all the more significant because the distance a village doctor must travel in visiting many of his rural patients makes it difficult for him to care for as many people as can a city doctor."

Clinical Calorimetry; Infection and the Ketogenic Balance.—Henry B. Richardson and Samuel Z. Levine (*Journal of Biological Chemistry,* March, 1925) determined the ketogenic balance in relation to the excretion of the acetone bodies in four patients, two diabetics and the other two not. All these patients were suffering from infection. These infected patients failed to excrete more acetone bodies for a given fatty acid-glucose ratio than did the noninfected individuals previously studied. The evidence from the data presented is that the ill effects of infection in diabetes are due, not to a disturbance in the ketogenic balance, but to an actual reduction in the amount or proportion of glucose oxidized.

The Rôle Played by Physicians in the Discovery of the New World.—In an interesting article published in the *Boston Medical and Surgical Journal,* March 18, 1926, Dr. William Pearce Coues said that the important part played by physicians in Columbus's great discovery was not generally realized.

La Chronique Medicale for December, 1922, he said, had an interesting article on this subject. It seemed certain by documentary evidence that it was largely due to the intelligence and perspicacity of a Spanish provincial physician, that Columbus was able to go forth in search of the new world, instead of being confined in the awful captivity of the times, as a person of unsound mind. The account of this important incident in the life of Columbus was given, which, translated, reads as follows:

"Another physician who played an important part in the life of Columbus was a simple village doctor, exercising his craft at Palos de Morguen in Andalusia. Columbus, tired out and ill had sought refuge in the convent of Santa-Maria de la Rabia. The Abbé in charge of the convent, thinking his guest was insane" (on account of his strange talk of new continents sand expeditions), "summoned Dr. Garcia Fernandez to attend the sick man.

"This wise physician, is discoursing with the illustrious explorer on geography and astronomy, quickly found that he did not have to do with an insane person, but with a man of great genius. He told his

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opinion to the Abbé, and the knowledge of this humble but learned physician probably saved Columbus from a miserable fate."

"Garcia Fernandez started with Vincent Yaneth for the discovery of the Orinoco, and was the first to sound its waters, from whose shores there was furnished later so much of therapeutic value."

"It must be remembered that it was a Florentine physician, Toscanelli, who fortified Columbus in his conviction of the existence of a great unknown continent. Without Toscanelli's advice, Columbus would have steered in a direction which, instead of leading him to America, would have led his vessels away from it.

"Two physicians accompanied Columbus in his first voyage, both unhesitatingly abandoning country, family and ease, to take part in the expedition organized by the great navigator. One of these physicians was 'Maitre Alonzo,' on board the Santa Maria and the other 'Maitre Jean,' on board the Pinta. Alonzo returned to Spain with the admiral, and they were overtaken by a frightful storm. The physician accompanied Columbus to Seville and Barcelona, but it is not now possible to say whether the return was by sea or by land. Maitre Jean finished his days in a tragic manner, being horribly massacred by the Indians, the first martyr of our profession in the new world."

"The chief physician of the second expedition, comprising 1,500 men, is better known to us. Dr. Diego Alvarez Chanca, of Seville, was physician in ordinary to King Ferdinand and Queen Isabella. His determination to accompany Columbus on his voyage was met with approbation by their Majesties, who addressed the following letter to him:

"The King and the Queen to Dr. Chanca: We have known that in your intention of serving Us, you wish to go to the Indies, and in doing this you will serve Us. You will be of help to those who go there by our orders, for our service: do this and go with our Admiral to the aforesaid Indies, he will talk to you of what will concern your sojourn there. . . . We send you a letter, so that you will be in receipt of the salary and emoluments that you usually receive from Us."

"Speaking of this physician in a letter to King Ferdinand, Columbus says, 'I have to inform Your Royal Highness of the constant labors of Dr. Chanca, on account of the great numbers of the sick he attended, and his occupation about our stores. He has given proof of the greatest zeal in all that concerns his art. Your Royal Highness, having left me at liberty to fix the sum of the honorariums which I am to give him, . . . I have established for him an annual credit of fifty thousand maravedi.' We are told that Dr. Chanca saved the life of Columbus, when he was attacked by a long continued fever, and that this physician wrote the first accounts of the new world, in the form of a report, addressed to the Municipal Council of Seville. He was the author of a number of books."

The article concludes, "That it is not probable that Dr. Chanca was the only physician who accompanied Columbus on his second voyage. It is likely that another surgeon made the voyage with the admiral, although history is mute concerning his name. His presence in this second expedition is incontestable, if we believe the manuscripts that we are entitled to believe. It is indeed probable that there were a number of physicians and surgeons, who passed over to America with an expedition numbering so many men."

More definite facts concerning this question will probably never be known, Dr. Coues said, but it must be of unfailing interest to physicians of the present, the world over, to realize what an important part those of their profession played in the discovery of the New World.

Health of New York.—The *Public Health Committee Report* of the New York Academy of Medicine for the year 1924 was published a short time ago. It is a document of surpassing importance and interest and its statements and views show the value of preventive measures. Child welfare has made much progress in New York city but is still susceptible of far greater advance. It is pointed out that among the principal problems before the community in this field are a better coordination of effort on the part of the various agencies; a more thorough understanding of the relative importance of the several activities; selfanalysis of the work by the operating agencies; and a research agency to evaluate the results of work done and to make available the results of the numerous studies, demonstrations, and experiments which are carried on in various parts of the country.

Stress is laid upon the fact that although there is a marked increase in the use of prenatal clinics and baby health stations, and while the indication is that at least twenty-five per cent. of the babies of New York come in contact with health stations, there exists no adequate machinery for effective work with the pre-school child. This lack of organization bears a sinister aspect when it is borne in mind that the greatest incidence of some of the most important diseases of infancy occurs in the age period under five.

Medical inspection of school children also needs reorganization and provision for neuromental examination of children, reduction of malnutrition, correction of dental defects and better organization of fresh air work are some of the links in the chain of child health activities which require strengthening. Attention is directed to that most common defect of children, that of bad teeth, and it is stated that the communal provision for dental care and prophylactic treatment of children in New York is insufficient to supply the demands for proper oral hygiene. The importance of teeth in the health economy of the individual is obvious and the fact that according to reports of the City Department of Health, sixty-two per cent. of the children have defective teeth, and a relatively small percentage have these defects remedied, are matters which make it imperative that energetic steps be taken on the part of all concerned toward a comprehensive program in oral hygiene. As the report goes on to say, the school clinics afford an effective means of combating the existing evil of neglected teeth through the prophylactic and curative work done as well as through education.

By proper supervision children whose parents can afford to pay for dental care could be eliminated from

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the clinics and urged to obtain the necessary services outside. It is noticed especially in the Report that accidents causing death and crippling, as well as minor injuries, are annually increasing both in actual numbers and in relative importance. The automobile is the greatest offender in this respect. Statistics of highway accidents in New York city from the Police Department records show that the total vehicular accidents in three years from 1921 to 1923 increased from 26,890 to 32,885, or 22.3 per cent., and according to the State Department of Health the mortality rate from automobile accidents in the State rose from 10.2 in 1917 to 15.9 in 1923. Moreover, a table prepared by the National Bureau of Casualty and Surety Underwriters and published by the Metropolitan Life Insurance Company indicates that in some cities the hazard from automobile accidents is several times greater than in others as measured by death rates to the one thousand automobiles registered.

New York city stands next to the highest in the rate of life destruction. Another question of interest considered by the Committee was that of drug addiction. According to the study made by Kolb and Du Mez, published in the May 23, 1924, issue of the *United States Public Health Reports,* the number of addicts in the United States has decreased steadily since 1900 and that the maximum number in the country at the present time is estimated at one hundred and fifty thousand.

A problem which is occupying the attention of thinking people in all the civilized countries of the world, namely the proper care of socalled chronic cases, is discussed in the Report. The situation in New York city at the present time is confessedly unsatisfactory. There are very few institutions where proper care is given, and there is no differentiation made between patients requiring merely custodial care and those who would be benefited by specialized medical and nursing care. Of course, there are many who require special care and in many instances special treatment. In particular may be mentioned those suffering from the various forms of rheumatism with the frequently related cardiac and vascular troubles. Institutions for this class of patients are few and far between in New York city and are for the most part unsatisfactory. They were established chiefly for the incurable and what is urgently needed are hospitals for the care of those who have not yet advanced to the hopeless stage. As said before the report is an extremely valuable presentation of the existing situation in New York city as regards the public health together with suggestions for further conserving and maintaining at a high level the health of the community.

There are many means whereby disease or ill health may be prevented and the health of the masses improved. In its report the committee of the New York Academy of Medicine does not deal with the greatest cause of disease, at any rate, in cities, namely housing and environment.

The housing question is outside the scope of its discussions and inquiries, but it may be again emphasized in these columns as it has been emphasized previously that if the slums of cities could be cleared away, and the children reared in an environment to which light and air had free access, disease and invalidity would be far less common and mentally and physically the race would be vastly improved. Personal and domestic hygiene should do as much or more for the conquest of disease during the next few years as public health measures have done during the past few years.

Bronchoscopy in Disease.—Chevalier Jackson (*British Medical Journal,* October 17, 1925) states that in any case of suppurative focus communicating with a bronchus, and in which the surgeon and the internist deem external operation not strongly indicated, bronchoscopic aspiration should be used to supplement medical care. A very satisfactory percentage of such cases will be cured. The chief contraindications to bronchoscopy are, 1, a moribund condition of the patient, and, 2, imminent rupture of the focus into the pleura.

Suppurative foci not communicating with a bronchus can be penetrated with the bronchoscope if deemed advisable, but the wisdom of doing so has not yet been demonstrated. If for any reason the surgeon deems external operation inadvisable, bronchoscopic penetration may be considered. In such cases spontaneous rupture into the bronchus or the pleura usually occurs sooner or later, and delay in external operation is very rarely advisable.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

NEURITIS AND NEURALGIA. By Wilfred Harris, M.D. 1926. Oxford University Press. Pp. 418.

PETIT PRÉCIS ANNUEL 1926 MEDICAL. By A. Cantonnet. Paris Norbert Maloine. 1926. Pp. 177.

TROUBLES DES ECHANGES NUTRITIFS. By Ch. Achard. Tome I. Paris: Masson & Cie. 1926. Pp. 695.

ANNUAL REPORT OF THE BOARD OF TRUSTEES OF THE LENOX HILL HOSPITAL (Fifty-sixth). New York. 1925. Pp. 89.

ANNUAL REPORT OF THE METROPOLITAN MUSEUM OF ART (Fifty-sixth, 1925). New York. 1926. Pp. 161.

NERVOUS AND MENTAL DISORDERS FROM BIRTH THROUGH ADOLESCENCE. By B. Sachs, M.D. and Louis Hausman, M.D. 1926. Paul B. Hoeber, Inc., New York. Pp. 861.

COLLECTED PAPERS. By Sigm. Freud, M.D., LL.D. Vols. I, II, 1924, III and IV, 1925, New York, London and Vienna: The International Psycho-Analytical Press.

AN INTRODUCTION TO THE STUDY OF X-RAYS AND RADIUM. By Hector A. Colwell, M.B. and Cecil P. G. Wakeley, F.R.C.S. 1926. Oxford University Press. Pp 203.

LES PROBLEMS DE LA PHYSIOLOGIE NORMAL E ET PATHOLOGIQUE DE L'OS. By R. Leriche and A. Pelicard. Paris: Masson et Cie. 1926. Pp. 229.

FÖRHANDLINGAR VID NOR DISK DERMATOLOGISK FÖRENINGS. SJÄTTE MOTE. Helsingfors 26-28. Augusti 1924. By J. J. Karvonen and B. Grönrooh. Helsingfors: Boktryckeri-Ab. Sana. 1925. Pp. 235.

CHIRUGIE DU SYMPATHIQUE. CHIRURGIE DU TONUS MUSCULAIRE. By P. Wertheimer et A. Bonniot. Paris: Masson et Cie. 1926. Pp. 134.

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Miscellany.

Rheumatic Diseases and Heart Disease.—That group of diseases and conditions of ill health loosely massed together under the term rheumatism are in themselves crippling and fatal but their deadliness comes chiefly from their sequelæ and especially from their malinfluence on the heart. Diseases of the heart in one form or another are responsible for the greatest number of deaths in most civilized countries due to one cause only. Moreover, it has been shown with striking clearness that rheumatism in some of its protean manifestations is the main factor in bringing about heart disease.

While rheumatism is quite rife in this country, it is in Great Britain that it is most prevalent and is permitted the widest scope for taking its toll of life and wreaking its damage on the body. The word permitted is used advisedly as rheumatism is largely a preventable disease. Another reason why rheumatism should be fought with all the vigor at our command is because it so greatly affects the manual worker that it may be justly classed as the outstanding industrial disease and is a menace to prosperity viewed from its economical aspect.

One sixth or thereabouts of the industrial invalidity of Great Britain is owing to that group of diseases commonly known as "rheumatics." The figures for this country are not available but there is little doubt that rheumatism and its after effects are responsible for great deal of the industrial invalidity here. Acute rheumatism is that form which most directly interferes with the smooth working of the heart machinery and its worst effects are exercised on children. Again acute rheumatism, as is the case with acute pneumonia and differing from most acute specific fevers, entails the liability to recurrence rather than immunity and the recurrent attacks are more apt to injure the heart permanently than the first attack. Believing then that in rheumatism, and in so far as the young are concerned in acute rheumatism, lies the main initial and exciting causes of endocarditis and other deviations from the normal course of the heart's action, the object is to prevent the occurrence of the malady and particularly, perhaps, that of the acute form. This last form is now generally held to be specific, although the micrococcus discovered by Dr. Poynton and Dr. Payne is doubted by many to be the true cause.

It seems, therefore, that in the prevention of acute rheumatism, every effort should be made to discover its origin or origins. Both children and adults after an attack should have rest and prolonged convalescence in order to prevent recurrence and subsequent heart trouble. It has been computed by some authori-

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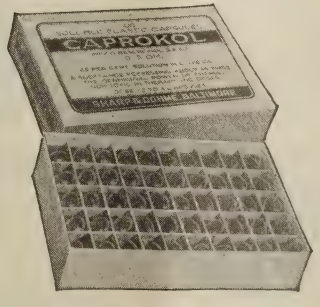

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ties here that such homes are required in a proportion to one bed to every ten thousand persons in the larger cities. Also it would be a long step in advance if there were special hospitals for acute rheumatic cases with cardiological and pathological departments.

The condition of the tonsils and the mouth should be scrutinized closely and defects and deficiencies remedied as far as is possible because tonsillar and oral sepsis, including teeth and gums, appear to be important etiological factors in the causation. Such scrutiny, of course, is especially applicable to children. Indeed diminution of acute rheumatism and of sequential organic heart disease, may be regarded as one of the main aims of school medical service. Lambert has shown that the number of in-patients under fifteen years of age admitted to Bellevue Hospital with acute rheumatism has not diminished, but that the great diminution in the total number of patients with the disease has been due to the diminished number of older persons, especially those between twenty and twenty-nine years of age, thus demonstrating the value of school examination and treatment.

Recent American statistics have shown that tonsillitis causes a large amount of industrial invalidity, necessitating sick benefit. Another point in connection with acute rheumatism, to overlook which would be careless, is the influence of environment. It may be stated almost positively, that damp, dark illventilated dwellings are favorable to the inception and spread of all forms of rheumatism and that the traditional association of houses with all varieties of rheumatism probably, rests on a substantial basis. Consequently, the abolition of slums and of basement dwellings, diminution of overcrowding, the increase of sunlight and ventilation and the more general adoption of house building of antidamp precautions, would doubtless aid in lessening the incidence of rheumatism.

While acute rheumatism is usually looked upon as a specific disease, chronic joint affections, the form which may be rightly termed the industrial disease, are for the most part probably of a toxic origin, that is to say, for instance, in perhaps one third or even one half of the cases coming under the head of rheumatoid arthritis there are the strongest grounds for holding that there is a definite focus of septic infection, and in the cases of osteoarthritis the proportion may be assumed to be higher. Undoubtedly in many instances chronic rheumatic diseases can be largely prevented by suitable manner of living and especially by careful diet and avoidance of prolonged constipation.

It seems reasonable to suppose that by maintaining free elimination and excretion the toxic material

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Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

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which otherwise is apt to collect and establish itself in the system is kept away and rheumatism is discouraged from developing, the soil not being favorable. Hereditary predisposition or diathesis is another factor which is beginning to be again taken into serious consideration when discussing the causes of rheumatism. In some individuals the soil may have been prepared by their progenitors for the ready reception of certain forms of rheumatism.

In the treatment of chronic rheumatic diseases as of acute rheumatism much good may be effected by special measures or rather by the establishment of special institutions with special equipment and with special staff. The treatment of arthritic patients in the most scientific and effective manner is impossible either by the general practitioner or by the ordinary hospital. A special institution is really economical in the long run because large sums are being lost yearly in allowing these diseases to progress practically unchecked. And in addition the concentration of such patients in an institution thoroughly equipped for the purpose of research must greatly increase our knowledge of the disease. Treatment of severe arthritis which while though now quiescent has resulted in severe crippling from contractures of knees or at other joints, is sometimes treated by forcible extension and the use of splints.

Dr. F. J. Poynton, the well known British authority, introduced on March 24th last a discussion on rheumatism at the Hunterian Society, London, in which he pointed out that he had witnessed some very successful results from the use of forcible extension and splints by Mr. Hoefftcke of London, the originator of the method. It is encouraging to know that interest is being aroused in this the most crippling disease of industry and in its effects on the heart the most deadly disease of civilization. The group of diseases known as rheumatism are in their ramifications most difficult and obscure and it seems that the suggestion that there should be special institutions for the observation of both acute and chronic cases and in reference to their effects on the heart in particular, are guided by sound common sense. The epidemic diseases have been and are being routed and ousted and it is time that campaigns were inaugurated against the chronic diseases which are steadily and in some instances rapidly increasing.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

LES ENTÉROPATHIES MICROBIENNES. Par Prof. G. Sanarelli. Paris: Masson et Cie, 1926. Pp. 227.

LA SÉCRETION INTERNE DU PANCRÉAS ET L'INSULINE. Par André Choay. Paris: Masson et Cie, 1926. Pp. 563.

ADVICE TO THE EXPECTANT MOTHER ON THE CARE OF HER HEALTH. By F. J. Browne, M.D., F.R.C.S.E. Edinburgh: E. & S. Livingstone, 1926. Pp. 40.

THE LAW OF LIFE AND HUMAN HEALTH. By G. R. Clements, LL.B., N.D. Boston: The Christopher Publishing House, 1926. Pp. 313.

DISEASES OF THE SKIN. By Richard L. Sutton, M.D., LL.D., F.R.S. Sixth Edition. Illus. St. Louis: The C. V. Mosby Company, 1926. Pp. 1303.

LOCAL ANESTHESIA IN OTOLARYNGOLOGY AND RHINOLOGY. By James Joseph King, A.B., M.D. Illus. New York: Paul B. Hoeber, Inc., 1926. Pp. 205.

TRAITEMENT DES MALADIES MENTALS PAR LES CHOCS. Par C. Pascal et Jean Davesne. Paris: Masson et Cie, 1926. Pp. 182.

SÉMIOLOGIE OCULAIRE. LE CRISTALLIN. ANATOMIE. PHYSIOLOGIE. PATHOLOGIE. Par Félix Terrien. Illus. Paris: Masson et Cie, 1926. Pp. 240.

STRENGTH OF RELIGION AS SHOWN BY SCIENCE. By Charles E. de M. Sajous, M.D., Sc.D., LL.D. Illus. Philadelphia: F. A. Davis Company, 1926. Pp. 252.

THE MIND OF THE NEGRO AS REFLECTED IN LETTERS WRITTEN DURING THE CRISIS 1800-1860. Edited by Carter G. Woodson, Ph. D. Washington, D. C.: The Association for the Study of Negro Life and History, Inc., 1926. Pp. 672.

RATIONAL GLAND THERAPY FOR WOMEN, PARTICULARLY IN RELATION TO MENSTRUATION. By I. Wanless Dickson, M.B., F.R.C.S. New York: Paul B. Hoeber, Inc., 1926. Pp. 96.

HAY FEVER AND ASTHMA. A PRACTICAL HANDBOOK FOR HAY FEVER AND ASTHMA PATIENTS. By Ray M. Balyeat, A.M., M.D. Illus. Philadelphia: F. A. Davis Company, 1926. Pp. 198.

POLITZER'S TEXT-BOOK OF THE DISEASES OF THE EAR. FOR STUDENTS AND PRACTITIONERS. By Milton J. Ballin, M.D., Ph.B. Sixth edition. Illus. Philadelphia: Lea and Febiger, 1926. Pp. 776.

BRAINS OF RATS AND MEN. A SURVEY OF THE ORIGIN AND BIOLOGICAL SIGNIFICANCE OF THE CEREBRAL CORTEX. By C. Judson Herrick. Chicago: The University of Chicago Press, 1926. Pp. 382.

ELEMENTS OF METABOLISM. METABOLISM TESTING, WHAT IS NORMAL? CONSPECTUS OF METABOLISM QUERIES, TABLES FOR COMPUTATIONS. By Frank B. Sanborn. Cambridge, Mass.: Sanborn Co., 1926. Pp. 56.

TECHNIQUE DES PRÉLÈVEMENTS ET DES BIOPSIES DANS LA PRATIQUE CLINIQUE. Par Robert Dupont, Roger Leroux and Jean Dalsace. Illus. Paris: Masson et Cie, 1926. Pp. 142.

ARBEITEN AUS DEM PATHOLOGISCHEN INSTITUT DER UNIVERSITÄT HELSINGFORS. Neue Folge. Vierter Band Drittes und viertes Heft. Illus. Herausgegeben von Prof. Dr. Axel Wallgren. Jena: Gustav Fischer, 1926. Pp. 458.

RÖNTGEN INTERPRETATION. A MANUAL FOR STUDENTS AND PRACTITIONERS. By George W. Holmes, M.D. and Howard E. Ruggles, M.D. Third edition. Illus. Philadelphia and New York: Lea and Febiger, 1926. Pp. 326.

THE NATIONAL FORMULARY. Fifth edition. Prepared by The Committee on National Formulary of the American Pharmaceutical Association. Official from July 1, 1926. Easton, Pa: American Pharmaceutical Association, 1926. Pp. 545.

ERGEBNISSE DER MEDIZINISCHEN STRAHLENFORSCHUNG (Röntgendiagnostik, Röntgen-, Radium- und Lichttherapie). Herausgegeben von H. Holfelder, H. Holthusen, O. Jüngling und H. Martius. Band II. Illus. Leipzig: George Thieme, 1926. Pp. 594.

UBER EINE BIS JETZT NICHT BEKANNTE RECESSIVE VERKNÜPFUNG VON HOCHGRADIGER MYOPIE MIT ANGEBORENER HEMERALOPIE. Separatabdruck aus Archiv der Julius Klaus-Stiftung für Vererbungsforschung, Sozialanthropologie und Rassenhygiene, Band I, 1925, Heft 3-4. Von Viktor Joseph Gassler. Illus. Zurich: Art. Institut Orell Fussli, Pp. 272.

During the Summer Months the question of what measures to employ to restore —and maintain—the nutritional balance, is often a difficult one. The digestive and assimilative functions tend to become inactive, and the natural trend of the body is toward loss of vitality and weight.

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Miscellany.

Mortality Record of the First Six Months of 1926.—Health conditions among the wage earning populations of the United States and Canada during the first half of 1926 were not only less favorable than for the same period of last year but of any year since 1920. The increased mortality in the first six months of 1926 was due, for the most part, to above average prevalence of influenza and pneumonia. It will be recalled that in 1920 the country experienced a very severe recrudescence of the 1918 influenza pandemic resulting in a very unfavorable death rate during the early part of that year. But in the latter half of 1920, the health situation took a surprising turn for the better; and when the year had run its course, it was found that the mortality of the industrial population had actually registered the minimum rate, up to that time. General population mortality statistics likewise showed that, with a single exception, 1920 had registered a lower death rate than any previous year. What occurred in the second half of 1920 suggests strongly that the 1926 influenza flurry constitutes, in itself, no real ground for pessimism as to the final health record for this year. It is still entirely possible that sufficient improvement will develop in the latter half of 1926 to counterbalance the high rate of the first half of the year. Up to July 10, the cumulative death rate of 1926 was only four per cent. above that for the corresponding period of 1925.

In addition to the higher rates for influenza and pneumonia, alcoholism numbered 598, corresponding to a death rate of 6.9 per 100,000, as compared with a rate of 6.7 for the corresponding period of 1925. In the first half of 1924 the rate was 6.0.

Since January 1, 1922, a period of four and one half years, alcoholism has caused 1,965 deaths among Metropolitan Industrial policyholders. Of these deaths, 1,943 occurred among approximately 16,000,000 persons living in the United States, while only twenty-two were recorded among approximately 1,000,000 Canadian policyholders. Most of the few deaths from alcoholism among Canadians insured in the Metropolitan Industrial department, during recent years, have occurred among approximately 360,000 policyholders in the Province of Ontario.

Deaths from wood and denatured alcohol poisoning numbered 10 during the six months' period. During the same months of 1925 and 1924, there were 15 and 8 deaths respectively. Deaths from this form of acute poisoning are unquestionably less frequent than they were in 1920 and 1921. Prior to these years, however, it was a comparatively rare occurrence to have a death reported from this cause.

A check of the Metropolitan's mortality records, by quarters, over a long series of years, shows that the mortality from alcoholism has a seasonal incidence. Although this is not very pronounced, it is nevertheless a fact that more deaths, on the average, occur during the first quarter of the year than in any of the other three months' periods.

Suicides have been more numerous this year and homicides a little less frequent. Accidental drownings have also registered a lower death rate.

The record of the half year for automobile fatalities is bad. The rate has increased among both white and colored policyholders, particularly the latter. It is true that among the whites the increase as compared with last year is not large (four and one half per cent.); but the fact remains that an increase has again been recorded. Even a stationary rate for automobile fatalities would be a challenge to every organization interested in public safety problems.—*Statistical Bulletin Metropolitan Life Ins. Co.*

Midwifery.—W. A. Daley, M.D., Hull, stated in considering the future midwifery in the homes of the people we must consider first what are the prevailing tendencies with regard to midwifery in this country. It appears to me that they are:

The percentage of women delivered by midwives is increasing and that of women delivered by doctors is decreasing.

The medical man is now, at all events in the industrial areas, attending a very small proportion of normal cases.

The need for antenatal supervision and even examination is being recognized increasingly; routine examinations of the urine, and clinical examination to ascertain disproportion, if any, between the head of the fetus and the mother's pelvis will, in a few years, become matters of routine.

The number of women who desire to enter a maternity hospital, maternity home, or nursing home, either public or private, for their confinement is increasing.

The number of confinements which take place at home is therefore decreasing, but the proportion attended by midwives is increasing, and the duty of providing midwifery in the home is much more exacting than it was some years ago.

Despite the increasing tendency to enter an institution for the confinement, there are still very many confinements which must take place at home because of inability to make proper provision for the care of the other children while the mother is away from home, and because some women have an inherent dislike to entering any institution. There will, therefore, always be sufficient work to provide a living for a large number of midwives who desire to work in the home of the people, but we want to improve the standard of midwifery done there. Between one thousand and two thousand preventable maternal deaths still take place in this country every year, and thousands of cases of chronic illhealth result from bad midwifery. Our future needs include better training of the doctor in midwifery, and better training of the midwife. It must be recognized that the time has gone when midwifery should be regarded as a method by which a policeman's or a postman's wife can augment her husband's earnings. The practice of midwifery should be similar to the practice of ordinary medical or surgical nursing, and the midwife should practice her calling, as does the trained nurse, in institutions or from nursing homes, and only occasionally from private houses. Incidentally, this would make the lot of the midwife much easier than it is at present, because I envisage the time when three or four midwives, who practice in the homes of the people, will join forces and live together; in this way they will be able to arrange definite offduty times. The most important immediate need is to encourage practising midwives to

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take an interest in antenatal work, and to assist them in every possible way to improve their technical knowledge.

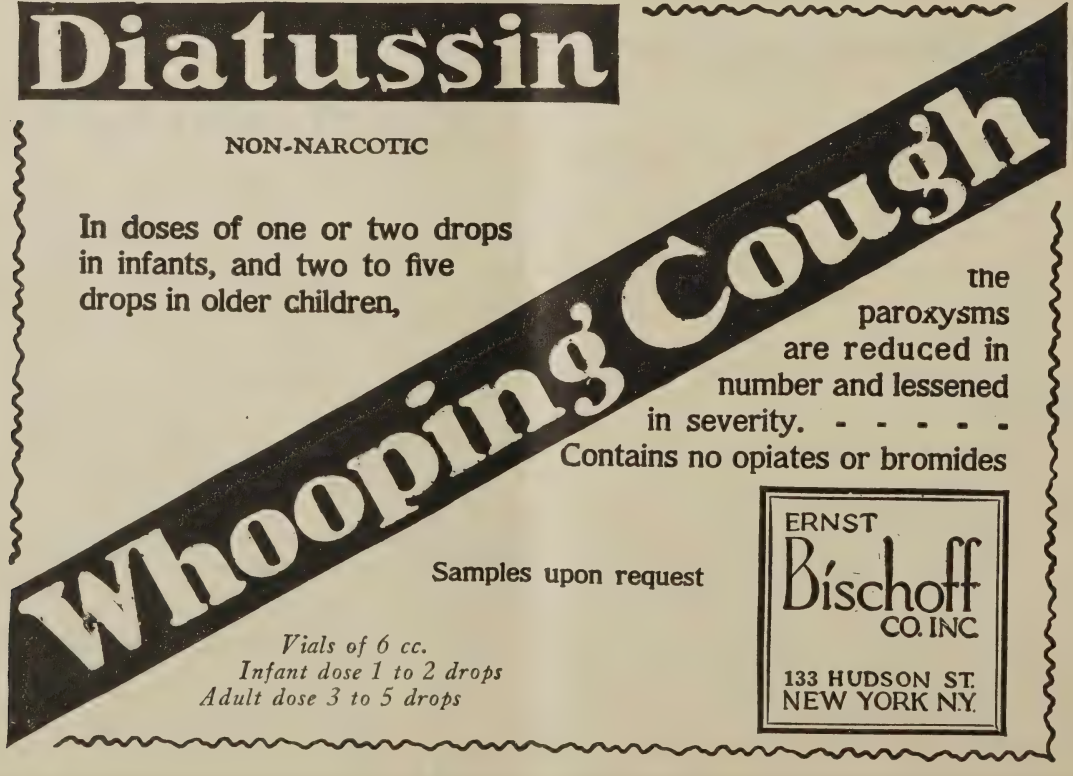
In one town where I worked I succeeded in persuading a large number of midwives to undertake definite antenatal care for each of their patients by providing certificates, which could be used for professional advertisement, to all who kept an antenatal register provided by the local authority, in which was set out questions which the midwives should ask each of their patients, and the answers to each, recorded in the register, indicated at a glance whether or not the case was likely to be normal. The midwives were required to examine specimens of urine, or to send them to the antenatal clinic for examination at definite intervals. In this way patients as well as midwives began to appreciate the value of antenatal work, and once the patients realize the need for antenatal work, the battle is won.

Every local supervising authority under the midwives act should provide lectures to the practising midwives. The lecturers should emphasize the fact that in the avoidance of obstetrical disasters, method is much more important than environment, and that good midwifery can be done if the method is good, in surroundings which are the reverse of those found in a well conducted hospital.

The most important point to be considered in endeavoring to improve midwifery in the homes, and I make the strongest possible plea for it, is the collaboration and goodwill of all concerned, namely, the private midwife, the private doctor and the local authority's medical and nursing staff, including the staff of the antenatal clinics and maternity homes. We must try to link up the midwives with our municipal schemes for preventing maternal deaths, but we must act as educators and not as detectives. There must be mutual understanding on both sides. The midwife must realize that it is not to her advantage to have a death either of mother or child among any of her cases, and she must realize, too, that it is not the object of the local authority to attract to maternity homes women who have already booked a private midwife, unless there is some real medical reason why the confinement should be conducted in an institution. Private midwives should be encouraged to cooperate in every way with the staff of the antenatal clinic. If they send a patient there, the doctor should always write to the midwife giving her the result of the examination, and the reason for any recommendation which is made. Midwives should be encouraged to attend the antenatal clinics with their patients. It is obvious that with the increased duties, there should be increased pay for the midwives.

The standard of knowledge and practice of the private midwife is improving every year. If the private midwife will only cooperate heartily with the municipal authorities, I am quite sure that hundreds of lives of mothers and children will be saved every year.

Puerperal Mortality.—During the past decade there has occurred a wide extension of nursing and of other measures directed toward the prevention of the serious and often fatal complications of the puer-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peral state. Public and private agencies have endeavored to provide instruction and supervision for pregnant women, increasingly stringent regulations of midwifery have been instituted, hospital service in confinement has been much improved and made widely available, and postnatal care has been provided through public health nursing agencies working in the home. It is of interest, therefore, to examine the Census Bureau's records of the mortality from abnormalities associated with childbearing for an area of the United States where much of the admitted improvement in maternity service has taken place during the past ten years.

There seems to have been a slight increase in the death rate for puerperal conditions reckoned against births in a constant area. This is clear from a comparison of the rates for the two periods 1915-1917 and 1921-1923. The death rates for puerperal sepsis and puerperal eclampsia have remained unchanged. These two conditions account for more than one half of the mortality connected with childbearing. Most of the preventive effort of agencies for maternal care has been directed at these two conditions.

Some improvement in the mortality figures has been observed in rural districts of these nine states. But here we have to consider the effect of improvement in birth registration. An increase in the proportion of births registered would tend to decrease puerperal mortality rates based upon births.

The fact that there has been no significant improvement in material mortality rates during the period under review should provoke inquiry. What could have been expected of the maternity work which was instituted with such fervor and zeal ten years ago? Was it founded upon sound principles, were its aims realizable, and was there a programme sufficiently comprehensive to affect the vast number of maternity cases which occur annually in the area under survey? Or have new factors intervened to offset the work of boards of health and of private agencies? Has the increased proportion of hospitalized cases been accompanied by more septic complications? Whatever be the answers to these and other questions which arise, it is clear that over the past decade little if any impression seems to have been made upon the risk of death in childbearing.—*Statistical Bulletin Metropolitan Life Insurance Co.*

Unity of Effort in the Child Welfare Service.—There are few voluntary organizations today who do not proclaim coordination of policy and cooperation of effort as their guiding principles. Local authorities also, who in the past have been slow to acknowledge outside endeavor, are at length admitting the soundness of these doctrines, while of recent years the State has constantly urged their primary importance, not only in promoting efficiency, but in establishing economic administration. Nevertheless, in the experience of every unprejudiced worker these doctrines, while loudly commended in theory, are still far from commanding full allegiance. Universal activity and widespread enthusiasm prevail on behalf of the child, but these fall short of their goal for lack of that consolidated purpose and intelligent direction which would not only incalculably increase the benefits achieved, but would equally increase the purchasing power of funds expended. Wider development and more substantial achievement in child welfare work are possible in many areas without any additional expenditure through the more intelligent development of existing machinery and the fuller coordination of existing endeavor.

This all essential unity and coordination can only be established when the policy of the three chief services of the State, local endeavor, and voluntary enterprise is so wisely directed as to meet by a combined effort the manifold needs of the child, eliminating the waste constituted by overlapping effort, and avoiding the loss entailed by incomplete or inadequate service.

POWER OF THE STATE

At the outset it is essential that intelligent workers in every area, whether responsible members of the local authority or pioneers of voluntary enterprise, should acquaint themselves with all legislation on behalf of the child and thus know the full responsibility accepted by the State for the child's wellbeing.

Since the establishment of the school medical service in 1917 down to the present time, the State has encouraged and promoted child welfare work by a series of progressive enactments which give to local authorities very extensive powers to initiate and carry out schemes for the protection and help of the children in their areas. But the State can only promote and develop such legislation as the people demand. Further legislation is dependent upon the will of the people urged through individual pioneers, and carried into law by the elected representatives who form the government of the nation.

Here we have a ground for common policy and mutual endeavor between the state and all other child welfare workers, whether official or voluntary, throughout the country.

It is clear that workers in various localities, particularly members of local councils, must cooperate with the State by putting into action all the powers which legislation gives. They must continually strengthen the hands of those who frame and those who administer laws by proclaiming the beneficial results accruing from new enactments. They must press for the provision of such new benefits as they have proved to be essential.

Those who blame the State because legislation is nonoperative in their area or is insufficient for the established needs of that area, fail to realize where the ultimate responsibility in this matter lies. It lies with the local authority, and it lies always and finally with the individual. Reforms throughout history have been the outcome of the proved experience of a few devoted workers whose influence has extended throughout the locality, and has gradually created such a volume of public opinion that the voice of the few has become the voice of the many, and the benefits promoted in a small area for a limited section of the people have extended to the nation as a whole. The extent of the State's power to benefit the child depends upon the cooperation of the local authority in carrying out legislation, and the demand of the people for that legislation.

RESPONSIBILITY OF THE LOCAL AUTHORITY

Upon the local authority and voluntary endeavor therefore devolve heavy responsibilities for the wellbeing of the children in their areas. If these children

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Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

FOR the infant, breast milk furnishes all of the requirements mentioned. There is no need to seek further for a better food because no one has as yet been able to prepare a formula which can be considered anything other than a second choice.

As a breast milk substitute there is no better food for the infant than Eagle Brand Milk. For more than four years the largest child-feeding clinic in the history of the world has been maintained in the Near East, and Eagle Brand Milk has met every requirement for a complete milk food for the infants and older children throughout this period.

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are diseased, crippled, or neglected, it is for the local authority to put into action all power given them by the State to remedy these conditions. It is for individual voluntary effort to support the local authority in such action, to supplement in every possible manner their endeavor, and by wellplanned propaganda to create the public opinion necessary for further progress. Such determined and united endeavor rarely fails to attain the goal.

But the principle that union is strength must be carried further. The local authority must fully coordinate the various departments of its child welfare scheme, and the manifold endeavors of voluntary effort must be similarly united. These two services must throughout work together, complementing and supplementing each other so that any required need of the child shall be fulfilled by that organization, whether official or voluntary, which is best fitted to fulfil that need, or by a joint endeavor so completely united as to form a continuous effort. The child must be throughout the first consideration, not the organization, still less the units making up the organization.

We have heard of the permanent damage sustained by the children of the nation by rheumatism contracted during school years or earlier. Mr. Girdlestone has urged the necessity for more scientific and more closely coordinated endeavor on behalf of children crippled by surgical tuberculosis, by paralysis, and by rickets. Papers like these should be read and assimilated by every member of the public health, the infant welfare, and the school medical service, and should also be studied by all voluntary organizations.

VOLUNTARY ENTERPRISE AS THE COORDINATING BODY

Tuberculosis is preventible, rickets is preventible, paralysis will soon be within the realm of preventive medicine. If these diseases are preventible, where is the leakage? The leakage is to be found in incomplete infant welfare work, in incomplete medical service, in the lack of adequate hospital organization (beds in some cases, but mainly organization), in the almost complete absence of good aftercare and followup work, in the gaps between the infant welfare work and the school medical service, in the failure to educate the mother and to make it possible for her to give that care and training to the child which is her prerogative, in the failure to educate the teacher to recognize those early symptoms of disease which call for the assistance of the school medical service or of voluntary agencies. Much of the effort of the local authority and of voluntary enterprise is characterized by lack of appreciation of the breadth of this greatest and most important of all fields of social service, and of the absolutely essential importance of comradeship in work. How many municipal committees work in watertight compartments with no vision of that ultimate goal of all endeavor, the selfsupporting, healthy, happy, citizen?

The committee for the feeding of necessitous school children rarely realizes that the problem of the hungry child does not happily arise in this country at this time. What does arise is the problem of the illnourished child, and for this the school meals committee needs the assistance of the school medical committee. The committee in charge of the physically defective schools fails to recognize that the roots of its endeavor lie with the school medical service and with the infant welfare service.

There are here and there local authorities who have established unity of endeavor both by coordinating their own effort and by making the fullest use of voluntary organizations, but such authorities are still in the minority. Many are content to do as little as they can and have an extraordinarily limited outlook on the whole problem. Many are antagonistic to voluntary enterprise and will not see the incompleteness of their own endeavors without its aid. On the other hand there are still many members of education authorities who are prejudiced against what is regarded by them as the noneducational part of their work. This prejudice has its origin in the financial problem, but it must nevertheless be overcome. It is impossible to separate the mental development of the child from its physical fitness. The Board of Education laid down this elementary truth long ago, but it is another of those principles to which many only give lip service.

The school medical service should be the centre round which all child welfare activities are grouped until the time comes when its place is usurped by the maternity and infant welfare workers. Care committees should be established in connection with all large elementary schools, and through these committees the fullest use should be made of all efficient voluntary organizations. Where care committees are not established the school medical service should deal with the voluntary organizations direct. Voluntary enterprise forms the link with the child's home. It is clearly impossible to help a child adequately without knowledge of the environment in which the child lives, the surroundings of the home, the degree of poverty in the home, the family medical history, what leisure the mother has to care for her children, her knowledge of hygiene and food values, and those many limitations in the child's environment which so materially reduce its chance of wellbeing.

The records of the infant welfare worker should be available for all children entering school, and when the infant welfare worker's supervision ceases at the age of three some provision should be made for the toddler. If such records are available and are carefully used, and voluntary aid is equally available, it will be possible to ensure that from the early days of school life illnourished children are fed, or that nutrition is secured by such food substitutes as cod-liver oil, malt, etc., that the children living in crowded areas and who are below the standard of health have the benefit of fresh air funds and convalescent homes, and that children attending hospitals are adequately followed up and their needs provided, and that the school doctor and hospital doctor work together. This unity of endeavor between the school doctor and the hospital doctor is nowhere more essential than in the schools for physically defective children. In securing this the aid of voluntary coordinating organizations, such as the I. C. A. A. Child Welfare Association, is invaluable, and these organizations secure the equally essential cooperation in the home. All workers for the crippled child, always including local councillors, must have the right understanding of the problem it is their privilege to be called upon to solve. Their task is to make crippled children a

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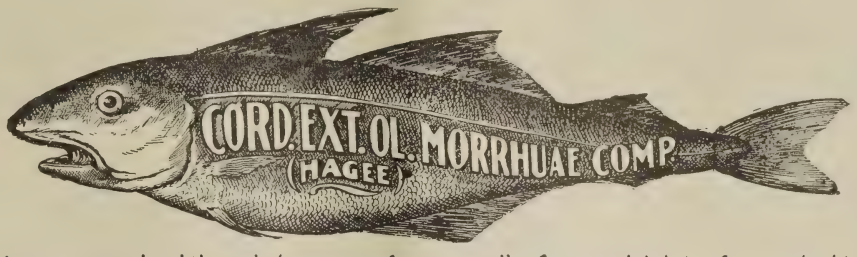
has such distinctive value in building up and charging the tissues with resistance that its use should be an important part of every case's therapeutic management. The patient under its reconstructive influence makes a better response to specific treatment.



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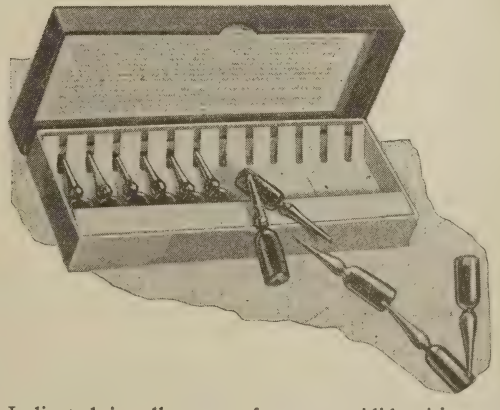

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disgrace to any locality, to put all societies for the care of cripples out of a job.

To achieve this goal early ascertainment of crippling disease is essential. Early ascertainment depends upon an efficient medical service, efficient and adequate infant welfare service, efficient and coordinating voluntary service.

It is in the infant clinic that the diseases which produce crippling can be ascertained, and an intelligent infant welfare service will immediately refer children so threatened to the orthopedic clinic.

One word about maternity welfare. Sir George Newman stated in one of his illuminating reports, which are an inspiration, that three thousand women lose their lives in childbirth annually. The damage rate is, of course, very much greater. This constitutes preventible loss. The environment of the child is its mother. What the child fails to get from its mother can never be made up in after years. The working class woman in thousands of homes in this country has no chance of any joy in motherhood, or of becoming a good or even intelligent mother. Unnecessarily impaired health, overwhelming domestic duties, inconvenient sunless houses, no labor saving devices, no leisure, holidays unknown. It is difficult to understand why every man and woman who has had a good mother, whose home has been a sanctuary, does not rise against such conditions in protest in this matter. Here is the biggest and most farreaching menace to the wellbeing of the nation's children.

Last year I visited those wonderful clinics of Dr. Rollier at Leysin. It was a living lesson in the healing power of sunshine and fresh air. When we learn to procure the benefit of this power for the mothers and children of our great cities, when annual migration into the country is possible for those who need it most, we shall quickly empty our hospitals.

One final word on the coordination of voluntary enterprise. I can only just refer to this subject. It is impossible to develop the full values of unity throughout the child welfare service within the limits of this paper: I have to scamp part of the subject. I am speaking tonight on the loss to the child produced by lack of coordination and linking up between our magnificent hospital service and outside social services, and what I have to say, then, will supplement this section of my paper.

I want just to urge here the need for constant safeguarding against overlapping in voluntary work. Many organizations doing work beyond praise in the field for which they were established are guilty of wasteful overlapping endeavor. How many organizations, for instance, develop special holiday or convalescent schemes without any reference to well established and existing activities? Thus the same child often benefits twice in the same year, while hundreds of others get no chance at all. Equally thus the right children are not chosen for the homes or camps where they would get most benefit. Use your experts in all sections of social work.

Such errors in judgment are mostly the result of excess of zeal and lack of knowledge. No earnest worker would be a party to overlapping who stopped to reflect that public support is after all limited in its extent, and that overlapping endeavor in one field diverts funds from fields where effort is badly needed.

The worker in this great and privileged field who pursues personal aim, either for himself of his special organization, is unworthy of his calling. For the welfare of the child is the welfare of the entire nation, and the fruits of our endeavor, if it be faithful, will live to bless our cities long after our little span of existence has ended. Let us, therefore, with a wide vision, with a big heart, and an unconquerable faith, accept our part in this greatest movement of the century, a movement in which men and women of all nations recognize that mankind owes the child the best it has to give, and pledge themselves, their gifts, and their lives to secure this great end.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

APPENDICITE. By Dott. Prof. F. Caneva Zanini. Milano: Societa Editrice Libraria, 1926. Pp. 96.

PRÊCIS DE RADIOTHÉRAPIE PROFONDE. By A. Béclére, M.D. Paris: Masson et Cie, 1926. Pp. 512.

LA CYSTOGRAPHIE. Etude Radiologique de la Vessie Normale et Pathologique. By H. Blanc et M. Negro. Paris: Masson et Cie, 1926. Pp. 189.

THE WHITE SPOTS OF EPILEPSY AND OTHER PHASES OF THE DISEASE. By Edward A. Tracy, M.D. Boston: Richard T. Howard, 1926. Pp. 129.

THE MEDICAL CLINICS OF NORTH AMERICA. July, 1926, Volume X, Number 1. Philadelphia Number. Philadelphia and London: W. B. Saunders Company, 1926. Pp. 260.

RATIONAL GLAND THERAPY FOR WOMEN, PARTICULARLY IN RELATION TO MENSTRUATION. By I. Wanless Dickson, M.B., F.R.C.S. New York: Paul B. Hoeber, Inc., 1926. Pp. 96.

CLINICAL PEDIATRICS. By John Lovett Morse, A.M., M.D. Illustrated. Philadelphia: W. B. Saunders Company, 1926. Pp. 848.

STUDIEN ÜBER DIE BLUTZUCKERREGULATION BEI EPINEPHREKTOMIERTEN TIEREN. By Carl Gustaf Sundberg. Stockholm: Isaac Marcus, 1925. Pp. 98.

PATHOLOGISCH-ANATOMISCHE STUDIEN ÜBER DIE OSTEODYSTROPHIA FIBROSA. By Ture Stenholm. Uppsala: Almqvist & Wiksells, 1924. Pp. 209.

ZUR KENNTNIS DER PNEUMATOSIS CYSTOIDES INTESTINORUM. PATHOLOGISCH-ANATOMISCHE UND EXPERIMENTELLE STUDIEN. By John Naeslund. Illustrated. Stockholm: Isaac Marcus, 1924. Pp. 100.

THE SURGICAL CLINICS OF NORTH AMERICA. June, 1926, Volume VI, Number 3, Lahey Clinic Number. Illustrated. Philadelphia and London: W. B. Saunders Company, 1926. Pp. 793.

A TREATISE ON PHARMACY FOR STUDENTS AND PHARMACISTS. By Charles Caspari, Jr. Illustrated. Seventh edition, thoroughly revised by E. F. Kelly. Philadelphia and New York: Lea & Febiger, 1926. Pp. 663.

ÜBER DEN ZUSAMMENHANG ZWISCHEN DER ALBUMINURIE UND DER WASSERSTOFFIONENKONZENTRATION IM BLUT UND URIN. By Alfred Bjure. Uppsala: Almqvist & Wiksells, 1925. Pp. 237.

CAVERNOUS SINUS THROMBOPHLEBITIS AND ALLIED SEPTIC AND TRAUMATIC LESIONS OF THE BASAL VENOUS SINUSES. A CLINICAL STUDY OF BLOOD STREAM INFECTION. By Wells P. Eagleton, M.D. New York: The Macmillan Company, 1926. Pp. 196.

STUDIEN ÜBER DIE CHIRURGISCHE BEHANDLUNG VON GASTRODUODENALGESCHWÜREN MIT BESONDERE BERÜCKSICHTIGUNG DER OPERATIONSANATOMIE UND DER POSTOPERATIVEN DIGESTIONSPHYSIOLOGIE NEBST EINEM BEITRAG ZUR FRAGE DER CHIRURGISCHEN BEHANDLUNG AKUTER ULKUSBLUTUNGEN. Von Gösta Bohmansson. Stockholm: Kungl. Boktryckeriet. P. A. Norstedt & Söner, 1926. Pp. 258.

During the Summer Months the question of what measures to employ to restore —and maintain—the nutritional balance, is often a difficult one. The digestive and assimilative functions tend to become inactive, and the natural trend of the body is toward loss of vitality and weight.

At this season—and under these conditions

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One of the main reasons, therefore, why so many physicians have come to use and highly appreciate Gray's Glycerine Tonic Comp. is that they have found it can be administered as freely in the Summer as at any other time of the year in the treatment of their convalescent, debilitated and elderly patients.

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In **Typhoid Fever Valentine's Meat-Juice** demonstrates its **Ease** of **Assimilation** and **Power** of **Restoring** and **Strengthening.**

I. Burney Yeo, M. D., *Professor of Therapeutics, King's College, London, in the well known work, "Food in Health and Disease":* "In a very severe case of Typhoid, under our care in King's College Hospital, with most alarming and profuse hemorrhage, we carried out a rigorous method of feeding with remarkably satisfacory results. The clear indication was to keep the intestines absolutely at rest and to allow no debris of food to pass through to excite peristaltic action. It was necessary therefore to give food which, while adequate to sustain and strengthen the patient, should be wholly absorbed in the stomach and upper part of the small intestines. To give milk might be fatal. For our purpose we selected VALENTINE'S MEAT-JUICE, giving one teasponful in a wineglassful of cold water every three hours, with one teaspoonful of brandy. The patient's diet was absolutely limited to these quantities for seven days. The plan answered admirably and the patient made a perfect recovery and fairly rapid convalescence."

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M-442

Miscellany.

Adrenal Gland Secretion Found to Be Cause of Body Heat.—The mechanism by which the body keeps warm has received a new scientific explanation. Dr. Charles E. de M. Sajous, professor of endocrinology at the University of Pennsylvania, thinks that adrenin, the substance secreted by the adrenal glands, small organs just above the kidneys, plays an important part in the production of body heat. Physicians and biologists have known vaguely for years that heat is released by some process of union of the body cells with the oxygen of the air through the action of the blood in the tissues, but just what chemical changes are involved is still a mystery.

Dr. Sajous believes that adrenin is carried to the lungs where it takes up oxygen and is then absorbed by the red corpuscles of the blood and transported to the tissue cells. Here the complex chemical compounds that originate in the glands react with the partially digested food products to produce heat. This enables the enzymes or ferments present which are very sensitive to heat to complete the digestion of the food products, rendering them available for the work each tissue carries on.

This heat action must be so controlled, says Dr. Sajous, as to avoid excess heat, since any rise above 98.5° F., the normal temperature of the body, means fever. Any excess is normally prevented by the glandular substance cholesterol, while adequate production is assured by thyroxin, from the thyroid gland of the neck, which also acts as a stimulus to the gland product lecithin, the heat producer.

The beneficial effects of light and heat treatments, such as ultraviolet and x rays, are due to their speeding up this physiological process, says Dr. Sajous. This heat energy, by increasing the activity of the enzymes present in the tissue cells, enables them to break down the disease causing germs and the toxins they produce. Treatments with light and heat radiation are beneficial up to a certain limit but care must be exercised that they do not increase the body temperature beyond this point, Dr. Sajous declares.—*Science News Letter,* August 14, 1926.

Institute for Child Guidance.—The Commonwealth Fund of New York City is planning to establish in July, 1927, an Institute for Child Guidance as an outcome of its five years' investigations in the field of prevention of juvenile delinquency. The purposes of the institute will be to do research work in mental hygiene for children; to train psychiatrists and graduate psychologists in child welfare work, for which the National Committee for Mental Hygiene will give annual fellowships; to provide field training in practical child guidance for students in psychiatric work at the New York School for Social Work and the Smith College School for Social Work; to afford adequate clinical facilities for the thorough study of behavior problem children. Dr. Lawson A. Lowrey will be director of the new institute; the administrative board will include Dr. Frankwood L. Williams, medical director of the National Committee for Mental Hygiene; Porter R. Lee, New York School of Social Work; Everett Kimball, director of the Smith College School for Social Work; Dr. William A. White, director of St. Elizabeth's Hospital, Wash-

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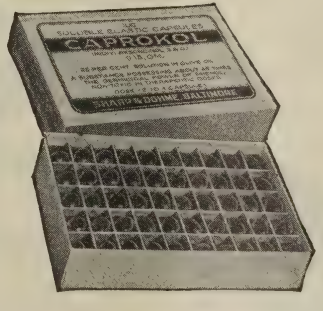

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UPON REQUEST

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Jour. A. M. A., Dec. 12th, 1925, Vol. 85, No. 24, p. p. 1855-1861.
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ington; Dr. C. Floyd Haviland, chairman of the New York State Hospital Commission; Mildred C. Scoville, executive assistant, Commonwealth Fund; Barry C. Smith, general director of the Commonwealth Fund, and three other members from the social and educational fields. The Commonwealth Fund will discontinue its present program in the field of mental hygiene including the Bureau of Child Guidance operated by the New York School for Social Research and the demonstration clinics conducted by the National Committee for Mental Hygiene.

Malaria Mosquitoes Controlled by Airplane Dusting.—Considerable success has attended the experiments of the United States Department of Agriculture in the use of the airplane as a means of distributing poison dust over both treeless and wooded swampy areas for control of malaria mosquitoes. In the final tests more than ninety-nine per cent. of the larvæ in the area treated were destroyed with one application. Paris green was the larvicide used in all the experiments. The procedure used in carrying out the tests is described in Department Circular 367, issued recently by the department.

In developing the method of handling the planes so as to distribute the dust properly and in determining the quantity of Paris green to use, flights were made first over open fields, then over dry woods, and finally over various types of mosquito breeding swamp and lake areas.

With an experienced pilot, and when careful attention was given to the spread of the dust, no special difficulty was encountered in distributing it over the treeless parts of the lakes. Furthermore, from a single experience in treating rice fields, this type of breeding place appears to be particularly well adapted to control by airplane dusting, because of the absence of trees and other obstructions which interfere with close flying. Even in such places as the heavily wooded areas where the water was protected by dense overhead foliage and where the planes had to be flown high enough from the ground to clear the tallest trees, the dust was found to have penetrated the thick growth and to have reached the water in sufficient quantities to destroy the larvæ.

The quantity of Paris green used in the experiments varied from about one twentieth of a pound to several pounds to the acre. Because of the small amount of poison required to kill the larvæ, the Paris green was mixed with an inert dust of some sort, finely ground silica earth being the carrier used in most cases.

In each test a series of pans containing known numbers of larvæ were distributed over the area to be dusted.

Two final tests gave particularly clear cut results, and for this reason were of special interest in showing the possibilities of this method of control in breeding areas of the type represented, the lakes overgrown with aquatic vegetation and having an abundance of Anopheles larvæ well distributed throughout. In the first of these a larval reduction of eighty-eight per cent. occurred as a result of the treatment, and in the second more than ninety-nine per cent. were killed. The only larvæ remaining in the second instance were a few of the smallest size, found in one small spot.

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Is also indicated in the treatment of all coughs of a

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Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

FOR the infant, breast milk furnishes all of the requirements mentioned. There is no need to seek further for a better food because no one has as yet been able to prepare a formula which can be considered anything other than a second choice.

As a breast milk substitute there is no better food for the infant than Eagle Brand Milk. For more than four years the largest child-feeding clinic in the history of the world has been maintained in the Near East, and Eagle Brand Milk has met every requirement for a complete milk food for the infants and older children throughout this period.

Reprints of clinical experiments with sweetened condensed milk will be sent upon request.

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Graves—*Gynecology*, 2nd Ed., 1921.

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Registration of Births.—The recent health talks on the importance of birth registration broadcast from Station WGY were especially for the purpose of stimulating parents to make sure that their children's births are registered, without waiting for the time to come when legal evidence as to the time and place of birth will be needed and perhaps not be available.

One mother recently wrote to the Department enclosing the names and dates of birth of her five children and asked that this information be checked up against the records in order to make sure that all were registered. She had not "realized before how important it was to have a baby registered."

Parents should first consult the records of the registrar in the district in which their child was born. If the child's name can not be found the Department should be notified.—*Health News,* August 9, 1926.

Summer Hotel Guests Made Ill by Milk.—Nearly two thirds of the guests of a New York State hotel were made ill on July 10th and 14th, apparently through the consumption of milk from a cow having a diseased udder. Soon after the evening meal on Saturday, July 10th, fifteen or sixteen guests complained of pain in the abdomen, nausea, vomiting and diarrhea. The attacks, which lasted only a few hours, were followed by prostration from which the patients recovered on the following day. No further cases developed until Wednesday, July 14th, when about the same number were seized with similar symptoms from which they made an equally quick recovery.

An investigation of the outbreak by the local health officer and by the district state health officer showed that the only raw food consumed by all guests on the days mentioned was milk. As this was served every day an explanation of the cause of the outbreak was not forthcoming until it was found that the owner of the dairy supplying the hotel had noticed on Friday night, July 9th, that the udder of one cow was enormously swollen and that the milk from one quarter was tinged with blood. The remainder of the milk from this cow was at once discarded. The Friday night's supply was not used until Saturday, the day when the first cases appeared. According to the dairyman's story the milk from the sick cow was not used again. However, as he further stated that the milk appeared normal on Wednesday, July 14th, the supposition is that some, at least, found its way into the supply, since the second group of people became ill on that day.

That this milk was the cause of the outbreak is further confirmed by two cases which present practically indisputable evidence. A son of the proprietor became ill about an hour before anyone else on Saturday. At first he denied having had any milk but a waitress reminded him that he had had a glass of milk and some cake about an hour before the evening meal. A physician who was called to see some of the first cases about two A. M. Sunday, drank a glass of milk while at the hotel, having taken no food since Saturday noon. He was awakened before daybreak Sunday by symptoms similar to those he had been treating.

Samples of the suspected milk were sent to the State Laboratory for examination. No report was available at the time this item was written.

The symptoms and temporary nature of the outbreak were very similar to those reported from Seneca Falls.—*Health News* August 9, 1926.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

THE MEANING OF PSYCHOLOGY. By C. K. Ogden. New York: Harper & Brothers, 1926.

HISTORIC CHURCHES OF THE WORLD. By Robert B. Ludy. Boston: The Stratford Company, 1926. Pp. 323.

A MANUAL OF NORMAL PHYSICAL SIGNS. By Blanton Wyndham B., B.A., M.A., M.D. St. Louis: The C. V. Mosby Company, 1926. Pp. 215.

THE MAUVE DECADE. AMERICAN LIFE AT THE END OF THE NINETEENTH CENTURY. By Thomas Beer, New York: Alfred A. Knopf, 1926. Pp. 268.

THE INTERNATIONAL MEDICAL ANNUAL. A YEAR BOOK OF TREATMENT AND PRACTITIONER'S INDEX. New York: William Wood and Company, 1926. Pp. 555.

THE CLINICAL INTERPRETATION REACTION. By Robert A. Kilduffe, M.D. Philadelphia and New York: Lea and Febiger, 1926. Pp. 203.

IMAGINATION. MIND'S DOMINANT POWER. By Benjamin Christopher Leeming. New York: The M. H. Schroeder Company, 1926. Pp. 288.

THE MEDICAL CLINICS OF NORTH AMERICA. CHICAGO NUMBER, Vol. IX, No. 6, May, 1926. Index Number. Philadelphia and London: W. B. Saunders Company, 1926. Pp. 1655.

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THE HYGIENE OF THE HOME AND RESPONSIBILITY FOR SEX EDUCATION. Boston: The Christopher Publishing House, 1926. Pp. 195.

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During the Summer Months the question of what measures to employ to restore —and maintain—the nutritional balance, is often a difficult one. The digestive and assimilative functions tend to become inactive, and the natural trend of the body is toward loss of vitality and weight.

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Miscellany.

Medical and Scientific Chronology in Philadelphia for 150 Years.—An interesting and useful little leaflet has been issued by Blakiston's Son & Company, publishers of Philadelphia, evidently for distribution to visitors at the Sesquicentennial Exposition. It contains a table of 150 years of medical and scientific chronology in Philadelphia which is interesting enough to warrant quoting: 1682, John Key, first white child born in Philadelphia; laid corner stone of Pennsylvania Hospital, 1755; 1683, first school; William Penn Charter opened; 1727, American Philosophical Society founded by Franklin; 1731, first library established by Franklin; 1732, David Rittenhouse inventor of Improved Orrery; Philadelphia Hospital and Insane Asylum established; 1736, Franklin's son died; smallpox; Franklin said: "I regret he was not inoculated"; 1740, University of Pennsylvania founded; 1745, first American Medical Journal; Cadwallader's Treatise on the West India Grippe; 1747-53, Franklin's electrical experiments; 1751, Pennsylvania Hospital for Poor Sick Persons; 1755, first commencement at University of Pennsylvania; Francis Hopkinson one of the graduates; 1756, first comprehensive college curriculum formulated by provost of the University of Pennsylvania; 1762, Dr. William Shippen lectures on anatomy; 1765, Medical School of University of Pennsylvania founded; Dr. John Morgan lectures on medicine; Philadelphia County Medical Society organized; 1768, first American diploma awarded in medicine; 1769, Dr. Benjamin Rush, professor of chemistry at the University of Pennsylvania; 1773, American Medical Society founded; existed until 1793; Dr. William Shippen, Jr., president in 1790; 1779, first State University created; included College of Philadelphia, founded 1740, which became University of Pennsylvania, 1791; 1786, Philadelphia Dispensary founded; 1787, College of Physicians of Philadelphia founded; 1788, action initiated towards preparation of a pharmacopœia; 1793, J. G. Mancrede first to propose Cæsarean section; special meeting of physicians to study yellow fever; Dewees, noted obstetrician, began practice in Philadelphia; 1794, committee of physicians consider health laws; 1804, Medical Lyceum; 1805, Dr. Philip Syng Physick in chair of surgery at the University of Pennsylvania; a pupil of John Hunter; 1812, Academy of Natural Sciences; 1818, T. Hensen prepared first and second United States Pharmacopœia; 1821, Philadelphia College of Pharmacy; 1824, Franklin Institute; 1825, Jefferson Medical College; 1827, Horticultural Society, first of its kind in America; 1831, Dr. Philip Syng Physick operated for gravel on Chief Justice Marshall and removed over one thousand calculi; 1833, Girard College; 1834, Wills Eye Hospital; 1843, Blakiston Publishing House established; 1848, Hahnemann Medical College organized; 1850, Eclectic Medical College of Pennsylvania chartered; first woman's medical college in the world; Philadelphia Lying-In Asylum organized; 1862, Spring Garden Institute; 1863, beginning of medical specialization; laryngology one of the first; 1864, clinics at Pennsylvania General Hospital opened to mixed classes; 1874, first teaching hospital—University Medical School; 1877, Jefferson Hospital (original) built; 1881, Wharton School; 1882, Directory of Nurses; 1883, Veterinary School and Hospital, University of Pennsylvania; 1884, first electrical exhibition in America; 1886, state weather service planned; 1891, Committee to advocate State Board of Medical Examiners and Licensers; 1893, first case of hookworm disease reported in Philadelphia; 1915, Dental School, Evans Institute, University of Pennsylvania; 1916, Graduate School of Medicine, University of Pennsylvania; 1921, Bartol Research Foundation, Franklin Institute.

Jamestown Eye Survey.—An eye survey of 8,000 children in the city of Jamestown, New York, has recently been completed by the State Medical Inspection Bureau working in cooperation with the National Committee for the Prevention of Blindness, the New York State Commission for the Blind and the Jamestown Board of Education. This survey was undertaken because authentic data on defective vision of children available to a fair degree for large cities and rural sections, was notably lacking for medium size cities. Jamestown was chosen because it belonged in this class, possessed school buildings ranging from old fashioned to strictly modern, had a health inspection system into which eye testing could be satisfactorily introduced and a board of education which promised cooperation.

Some of the more important findings were:

The percentage of defects found in this survey, when classified by the grouping in common use throughout the country, was eighteen per cent. (figures based on the usual classification) as compared with the twelve per cent. estimate of the Joint Committee on Health Problems of the National Education Association and the American Medical Association. This is not an indication of an increase in defects but of the observance of a little more accuracy in testing the acuity of vision.

2. A definite program on eye hygiene, which consists not only of correcting defective vision but conserving all vision.

3. A more inclusive grouping which will route all potential defective vision cases for a complete examination. . . .

4. Appreciation of the necessity for an ophthalmological study of the farsighted as well as the nearsighted child. . . .

5. Further observation of the relationship between defective vision and retardation. . . .

The amount of defective vision . . . was eighteen per cent. . . .

The percentage of defective vision which may readily be corrected in a few months' time through the social facilities available . . . was approximately thirty per cent. . . .

About one in every 286 of the school children has sufficiently defective vision to warrant specialized education for him. Thirty-one such children were found. . . .

It costs the board of education of a city having a school population of 8,000 children an estimated minimum of $300 every year for retardation of school children whose eye defects are the contributing factor in their retardation. This figure was furnished by the board of education of Jamestown.

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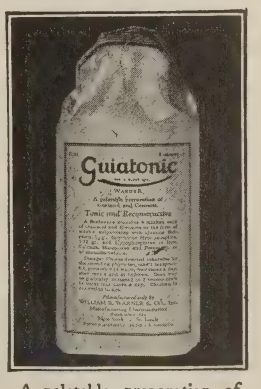
and the various organs are not functioning as they should, it is essential not only to increase the appetite, but also to raise the capacity of the body to take care of the increased intake of food that naturally follows.

The efficiency of GUIATONIC in accomplishing the foregoing, has led to its adoption by many physicians as their favorite recuperative agent and all-round tonic. They have learned that when they prescribe Guiatonic *the results are seldom in doubt.*



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United States Smallpox Rate in 1925.—The United States has the unenviable distinction of reporting more smallpox during 1925 than any other country except India, namely 43,193 cases, according to reports which have been received by the American Association for Medical Progress from the health officers of all but one state (Utah). This shows a substantial improvement over 1924, when we boasted 56,351 cases. Moreover, the last six months of the year 1925 gave less than half as many cases as were reported for the first six months. On the other hand, there has been a large increase in the proportion of deaths from smallpox since January 1st in California and other places.

Most of the states do not report the vaccinal condition in cases of smallpox. In seventeen states and the District of Columbia such reports are available for most of the cases—10,636 out of the total of 12,858 cases in these states. Among these, over nine tenths, or 9,660 cases, had never been vaccinated, and 751 cases, about seven per cent., had been vaccinated from seven to fifty years previously.

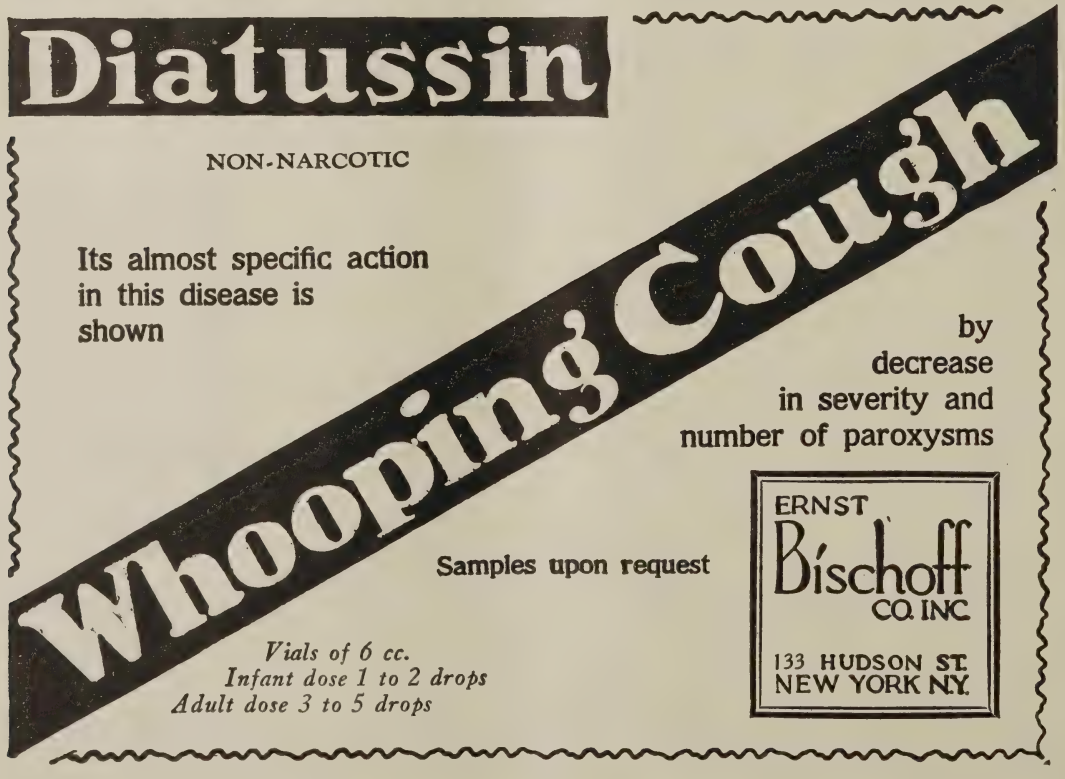
Thirteen states each reported more than one thousand cases of smallpox in 1925, California leading with 4,921 cases, followed closely by Alabama (4,288), and Ohio (4,018). Indiana had 2,996 cases; Georgia, 2,108; Washington, 2,004; North Carolina, 1,920; Tennessee, 1,805; Kentucky, 1,700; Illinois, 1,625; Wisconsin, 1,517; Texas, 1,309; Mississippi, 1,216.

All of the six New England States together had only 102 cases, ninety-four of which were in Rhode Island.—*Medical Week,* August 14, 1926.

Travelers and Health.—Americans are rapidly becoming a nation of travelers. By land and water they are increasingly on the move. From many sections of the country reports indicate that the traveling public is presenting social, economic, and health problems of no mean proportions. To meet the situation provision is being made in a few large cities for a twenty-four hour information and medical service, but in smaller communities the harassed traveler is at the mercy of hotel attaches or other strangers. Medical attention is often required in an emergency, and when neglected, fatal results may follow.

The arrangements being perfected by traveling men's associations whereby reliable medical service may be obtained in towns of over ten thousand population is a movement of first importance. As the tide of travel increases the number of physicians doing such work will surely increase. The results of their treatment will be checked by physicians in other cities, and thus one more activity of the medical profession will assume a public health aspect. The physician's influence will be limited only by the movements of his traveling patients and his ability or lack of ability will be paraded in many far away places. This should stimulate a desire to render the best possible service, and whet the ambitions of the progressive physician to keep abreast of advances in medical practices, knowing that his work will be reviewed by other practitioners.

Thus, the wanderlust which has laid hold of such a large proportion of the population is broadening the influence of medical treatment in its public health relations.—*The Nation's Health,* April, 1926.



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Especially indicated in insomnia from mental strain, neurasthenia and other neuroses; also an excellent sedative in sea-sickness.

Literature on Request

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Origin of Porcelain Teeth.—The use of porcelain for dental purposes, according to *La Thérapeutique,* had its origin in France at the beginning of the eighteenth century. Credit for the invention belongs partly to a pharmacist, Duchâteau, of Saint Germain en Laye. His idea would have had no practical results without the cooperation of the dentist, Dubois de Chemant, who brought about its materialization.

Duchâteau was the possessor of a set of false teeth made of ivory which had acquired a most offensive odor. He had the idea of making on the same model a porcelain set. After several unsuccessful attempts he succeeded, with the help of Dubois de Chemant, in making a usable appliance. While Duchâteau was trying to commercialize sets of mineral materials, de Chemant, little by little, was perfecting mineral compositions. In 1788 he published his first monograph on mineral teeth.—*Translated from Aesculape.*

Cyrus the Great Used Boiled Water.—Herodotus, Book I, Chapter 189, states that the Cyrus the Great of Persia, on his military expeditions, carried with him boiled water from the Coaspes River in silver vessels on four wheeled wagons. As this ruler died about 530 B.C., it is apparent that for nearly twenty-five centuries military leaders failed to take advantage of this lesson which these ancient rulers had learned, or to grasp its significance. Aristotle is credited with having advised Alexander the Great to boil all the water carried on his marches through the desert to keep it from getting "sour."—*Health News.*

Pullman Porters All Vaccinated.—The report of the discovery of a number of cases of smallpox among negroes employed in brickyards along the Hudson River was brought by the Department to the attention of Dr. Thomas R. Crowder, Director of the Department of Sanitation and Surgery of the Pullman Company. In a letter Dr. Crowder states that before a negro is taken into the service of the company as a porter he must either be vaccinated or show evidence of a recent successful vaccination. The physician making the examination must satisfy himself that the scar is less than five years old; if older than this, at least one attempt at reinoculation is required. Applicants must also be examined as to physical fitness. Approximately 12,000 negroes are employed by the company as car porters.—*Health News,* August 9, 1926.

Westchester County Sanitary Commission.—Three quarters of the population of Westchester County, which approximates half a million people, will have the benefit of a comprehensive sewer system and sewage disposal works if plans outlined by the Westchester County Sanitary Commission at a recent meeting are carried out. A report of the survey of the Saw Mill River valley sewage project was made to the Commission by W. W. Young, the chief engineer, and a former member of the staff of the Division of Sanitation. He was instructed by the Commission to proceed with all possible speed to complete the survey of the Mamaroneck and Hutchinson River valley projects. The proposition will then have to go before the people for adoption.—*Health News,* August 9, 1926.

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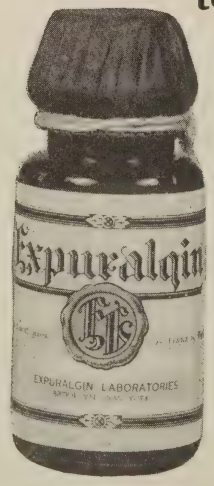

DOSAGE—10 to 15 grains every three hours until acute pain abates; then 10 grains every four to five hours. In Hypertension 10 grains three times a day; reduce dosage as blood pressure shows desired decrease.

ADVANTAGES—

1) Not toxic in large therapeutic doses.
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4) Possesses the property of producing LEUCOCYTOSIS to a marked degree; an essential factor in inflammatory conditions.
5) A mild, but positive diuretic.
6) An effective vaso-dilator, hence very desirable in cases of HYPERTENSION.

INDICATIONS—

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FOR the infant, breast milk furnishes all of the requirements mentioned. There is no need to seek further for a better food because no one has as yet been able to prepare a formula which can be considered anything other than a second choice.

As a breast milk substitute there is no better food for the infant than Eagle Brand Milk. For more than four years the largest child-feeding clinic in the history of the world has been maintained in the Near East, and Eagle Brand Milk has met every requirement for a complete milk food for the infants and older children throughout this period.

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Children's Bureau Exhibit at Sesquicentennial.—A baby's "fashion show," a model nursery, a model playground, moving pictures and film slides, and a children's clinic in active operation are among the exhibits of the Children's Bureau at the Sesquicentennial in Philadelphia, according to the *Medical Woman's Journal.* There is also a "mechanical book" on the constantly turning pages of which may be read in large figures the infant and maternal mortality record of the United States, the former fairly good, and the latter very far from creditable. Dominating the whole and striking the keystone of the exhibit and of the work of the Children's Bureau, is the great mural painting entitled "The Child Shall Be First," painted for the Bureau by Peppino Mangravite. This faces the entrance to the Children's Bureau Exhibit. Two motion pictures are shown, one, *Well Born,* demonstrating simply and convincingly the essentials of prenatal care; the other, *Posture,* a film produced under the direction of Dr. Armin Klein, whose work as director of the posture clinic of the Massachusetts General Hospital and of posture clinics for the city health department of Boston has attracted wide attention.

Sleeping Sickness Victims Reeducated Like Cripples.—Children whose characters are strangely warped as a result of the European sleeping sickness have crippled brains and may be classed with crippled children, even though they have no visible deformity of body. This new idea in dealing with the serious aftereffects of sleeping sickness is proposed by Miss Holvi Haahti, a Finnish psychiatrist who has been conducting tests at the Institute of Juvenile Research of Illinois.

The number of children who are left by this disease with overpowering desires to steal, commit sex offenses, lie, and run away from home is sufficient to make them a serious social problem, but most cities have made no special provision for their education or retraining. Miss Haahti reports that as an experiment seven children who had had sleeping sickness were admitted to a special school for physically crippled children, in Chicago, and were treated like the other cripples, with promising results.

Sleeping sickness victims, who were often quiet, well behaved children before the attack, are usually considered bad because of their strange behavior, and are dealt with accordingly by parents and teachers, she states. In the special school for cripples these children were in close contact with teachers who understood the defects and with children who know that they were "sick" just like the rest of the class except that the disability was in a different part of the body.

The chief problem is to reestablish the child's good physical and mental habits, which were destroyed during the acute stage of the disease, Miss Haahti states. Typical physical bad habits of these children are a peculiar gait, and jerky, awkward movements of the arms, which indicate the same lack of self control that leads them to fall into violent rages or to steal money from a neighbor.

She finds that "the question which has not yet been sufficiently answered is whether these good habits can be reestablished by careful habit training over a long period of time, or whether the nerve paths were permanently destroyed by the disease so that retraining would not be possible."—*Science News-Letter,* August 21, 1926.

Tuberculosis in New York City.—During the first four months of 1926 twenty tuberculosis hospitals serving New York City cared for 7,250 patients, according to a report made by Godias J. Drolet, consulting statistician of the Tuberculosis Sanatorium Conference of metropolitan New York at its bimonthly meeting held June 9th at Seton Hospital, Spuyten Duyvil.

On May 1st, Mr. Drolet reported, all known cases of tuberculosis in New York City recorded at the Department of Health totaled 26,254. During January and February of this year deaths from the disease were fewer than a year ago, but in April and May the number of deaths slightly exceeded the record for those months in 1925.

More than nine thousand tuberculous patients were entertained during the last four months in 328 wards of fourteen hospitals and sanatoria by concerts arranged by the New York Tuberculosis and Health Association, according to a report made by Frederic D. Bell, secretary of the Conference and director of the Hospital Service Department of the Association. Two hundred and ninety-nine musicians and entertainers volunteered their services for these concerts.

Rev. Joseph S. O'Connell reported that the Catholic Church maintains twenty-six day nurseries in New York where regular medical supervision of the 2,500 children who attend them is used to discover incipient cases of tuberculosis.—*N. Y. Medical Week.*

Cremation.—As the population for a country grows larger and an increasing proportion of it migrates to the cities, disposal of the dead becomes a problem. Even now, in some communities, the economic loss from maintaining inviolable cemeteries is tremendous. The esthetic aspect, furthermore, has considerable weight, as burying grounds may be unsightly; and they injure real estate values. The practical alternative to earth burial is cremation. In the United States, although thinking people have long favored the method, cremation has not been widely adopted. Greater progress has been made in other places. Zurich, in Switzerland, for instance, allows interment in a suitable place but does not provide facilities for it. On the other hand, every facility for cremation is provided. A Japanese has recently developed a smokeless and odorless crematory in which combustion is rapid and which requires little fuel. In England, also, cremation is gaining favor. The number of cremations in Great Britain has increased from 445 in 1901 to 2,701 in 1925. This progress, however, was not effected until the Cremation Society of England spent much effort on education of people in the idea. During this process of education, it was discovered that the public shunned the subject of what happens to the body after death. They were willing, however, to discuss the esthetic and sentimental aspects of the question. Beautiful gardens in which ashes might be dispersed appealed to them as a fitting, living memorial to the dead, much more appropriate than the traditional cemetery.—*Journal A. M. A.,* August 14, 1926.

IN GETTING CHILDREN READY FOR SCHOOL

an important item to remember is to put those who are anemic, or run-down, on an agent calculated to build them up and enable them to meet the heavy demands of the school term.

by reason of its blood and tissue making properties meets the indications in these cases and without causing gastric disturbances.

You will find Cord. Ext. Ol. Morrhuae Comp. (Hagee) a reliable reconstructive and so acceptable that it may be continued indefinitely.

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We are so confident that K-Y Lubricating Jelly can and will bring a new era of safety and comfort to the unfortunate person whose very existence is dependent upon the constant use of the catheter, that we are anxious to send you, upon request, a large size tube of K-Y Lubricating Jelly for the catheter case in which you might wish to use it. This would give your patient an opportunity to make the trial without expense.

When you feel utterly tired and worn out, you will be agreeably surprised what prompt relief and what a noticeable sense of refreshment you can obtain by applying K-Y ANALGESIC (non-greasy and water-soluble) to the forehead. Without harmful after-effect, it will often help you to "live out" the tedious day, and face its many exacting duties.

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..... Druggist

Alma Mater Home Coming.—Dr. Charles Geiger, president of the Alumni Association of the Ensworth-Central Medical College has extended to the Alumni Association a cordial invitation to hold the second annual meeting and banquet in St. Joseph, Mo., at the St. Francis Hotel, as his guests. The invitation is a "blanket" one and includes all graduates of the Ensworth-Central and Northwestern Colleges, as well as the professors. An entertaining program is being arranged, including Dr. Geiger's moving picture lecture, illustrating his recent world cruise and report on clinics in the far East. The meeting will be held on Wednesday evening, October 13th, during the Kansas City Fall Clinical Week. Wednesday evening is to be entirely devoted to alumni dinners at the Kansas City Clinics, so the members will miss no part of the program by attending the banquet in St. Joseph. Dr. Charles Wood Fassett, Secretary, of 115 East Thirty-first Street, Kansas City, Mo., is secretary of the association.

European Tour of American Physicians Winds up with Banquet in New York.—The well known New York surgeon, Dr. F. H. Albee, who returned to New York a few days ahead of his travel companions from the trip of the Travel Study Club of American Physicians to Europe, had invited all the participants of the tour to a welcome and at the same time a farewell dinner at the Fraternity Club, 22 East Twenty-eighth Street, New York City, on Monday night, August 9th, that is, on the day of the return of the party, before they would depart for California, Florida, and wherever their homes may be. Dr. Albee extended a hearty welcome to his travel companions. All through the evening it was heard what an interesting and wonderful time everybody had. Much praise was given to the German resorts and German medical science. Memories of the trip were exchanged and after the showing of lantern slides of pictures taken on the tour through Switzerland and German resorts the guests parted. Among those present were Dr. L. L. Seaman, 20 Fifth Avenue, N. Y., the president of the club, and Dr. Richard Kovacs of 223 East Sixty-eighth Street, the secretary of the club and conductor of the tour, and all the other participants of the tour. One of the guests invited was Dr. A. H. Applemann, the representative of the German Health Resorts, 630 Fifth Avenue, who had prepared the trip through the German resorts.

Foot and Mouth Disease Specialists Return.—The foot and mouth disease commission sent to Europe to study the research being done there on the problem has returned after more than a year's stay. The commission, which consists of Dr. Peter K. Olitsky of the Rockefeller Institute for Medical Research, Dr. Jacob Traum of the University of California, and Dr. Henry W. Schoening of the Federal Bureau of Animal Industry, is now engaged in writing its report of the survey. After studying research work and control measures employed in France, Germany, England, Denmark, Sweden, Holland, Belgium, Switzerland, Austria, Hungary, and Italy, the commission established itself at the *Institut d'Hygiène*, Strasbourg, and later at the *Laboratoire National de Récherches*, Alfort, France. Experimental studies were made at these institutions on the causual agent of foot and mouth disease from its physical, chemical and biological aspects. Particular attention was given to certain phases of the problem bearing on methods of control of the disease used in this country.

Research on Sleep.—In 1924 the Simmons Fellowship was founded at Mellon Institute of Industrial Research, University of Pittsburgh, to carry on a broad study of problems in the promotion and maintenance of healthful sleep. Dr. H. M. Johnson and Mr. G. E. Weigand, psychologists, and Dr. T. H. Swan, physical chemist, have been conducting this research during the past year. Recently Dr. Carney Landis, physiologist, has temporarily joined the personnel of the investigation. It has recently been announced that from now on there will be two separate Simmons Fellowships at Mellon Institute. One of them will continue the research on the physiological and psychological factors of sleep under the supervision of Dr. Johnson. The other, held by Dr. Swan, will be concerned chiefly with the subject of bedding materials. This investigational work is being supported primarily for the benefit of the public, consequently the experimental results will be published.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

FOURTEENTH ANNUAL REPORT OF THE UNITED FRUIT COMPANY, MEDICAL DEPARTMENT. 1925. Pp. 320.

MEDICINA FENNICA. ANNO 1925. By Gösta Becker,M.D. Helsingfors: Kirjapaino-Osakeyhtiö Sana. 1926. Pp. 176.

EPILEPSY. A FUNCTIONAL MENTAL ILLNESS. ITS TREATMENT. By R. G. Rows, M.D., and W. E. Bond, M.R.C.S., L.R.C.P. New York: Paul B. Hoeber, Inc., 1926. Pp. 138.

FUNDAMENTALS OF DERMATOLOGY. By Alfred Schalek, M.D. Illustrated. Philadelphia and New York: Lea & Febiger, 1926. Pp. 239.

CANNULA IMPLANTS AND REVIEW OF IMPLANTATION TECHNICS IN ESTHETIC SURGERY. By Charles Conrad Miller, M.D. Chicago: The Oak Press, 1926. Pp. 99.

SURGERY OF NEOPLASTIC DISEASES BY ELECTROTHERMIS METHODS. By George A. Wyeth, M.D. Illustrated. New York: Paul B. Hoeber, Inc., 1926. Pp. 298.

GOITRE. AND OTHER DISEASES OF THE THYROID GLAND. By Arnold S. Jackson, M.D. Illustrated. New York: Paul B. Hoeber, Inc., 1926. Pp. 401.

POLITZER'S TEXT BOOK OF THE DISEASES OF THE EAR. FOR STUDENTS AND PRACTITIONERS. By Milton J. Ballin, M.D., Ph.B. Illustrated. Sixth Edition, revised and largely rewritten. Philadelphia: Lea & Febiger, 1926. Pp. 776.

INJURIES OF THE WRIST. A RADIOLOGICAL STUDY. By the late Dr. Etienne Destot. Translated by F. R. B. Atkinson, M.D.C.M. Illus. New York: Paul B. Hoeber, 1926. Pp. 176.

STUDIES ON THE MORPHOLOGY AND MORHOGENESIS OF HUMAN THORACOPAGIC MONSTERS WITH SPECIAL REFERENCE TO THE MALFORMATION OF THE HEART. By Fredrik Ysander. Illustrated. Uppsala: Almqvist & Wiksells, 1924. Pp. 236.

THE CLINICAL EXAMINATION OF THE NERVOUS SYSTEM. By G. H. Monrad-Krohn, M.D., M.R.C.P. Third Edition. Illustrated. New York: Paul B. Hoeber, Inc., 1926. Pp. 201.

ELECTROTHERMIC METHODS (Desiccation and Coagulation), IN THE TREATMENT OF NEOPLASTIC DISEASES. By J. Douglas Morgan, B.A., M.D. Illustrated. Philadelphia: F. A. Davis Company, 1926. Pp. 172.

MÉMOIRES COURONNÉS ET AUTRES MÉMOIRES. Publies par L'Academie Royale de Médecine de Belgique. Tome XXII, Cinquième Fascicule. Bruxelles: Goemaere, Imprimeur du Roi, 1925. Pp. 112.

MEMOIRES COURONNES ET AUTRES MEMOIRES. Publies par L'Academie Royale de Médecine de Belgique. Tome XXII, Huitieme Fascicule. Bruxelles: Etablissements D'Imprimerie "L'Avenir," 1926. Pp. 42.

LYSSA, BEI MENSCH UND TIER. Von Prof. Dr. R. Kraus, Dr. med. vet. F. Gerlach und Dr. F. Schweinburg. Illustrated. Berlin und Wien: Urban & Schwarzenberg, 1926. Pp. 464.

THE HUMAN CEREBROSPINAL FLUID. Association for Research in Nervous and Mental Disease. A Series of Research Publications. Volume IV, 1924. Illustrated. New York: Paul B. Hoeber, Inc., 1926. Pp. 568.

GOULD'S MEDICAL DICTIONARY. Containing All the Words and Phrases Generally Used in Medicine and the Allied Sciences, with Their Proper Pronunciation, Derivation, and Definition. By George M. Gould, A.M., M.D. Edited by R. J. E. Scott, M.A., B.C.L., M.D. Philadelphia: P. Blakiston's Son & Co., 1926. Pp. 1398.

PATHOLOGY AND TREATMENT OF THE INFLAMMATORY DISEASES OF THE NASAL ACCESSORY SINUSES. By Prof. Dr. M. Hajek. Translated and edited by Joseph D. Heitger, A.B., M.D. and French K. Hansel, M.D., M.S. Fifth edition, completely revised and enlarged. Illustrated. Volume I. St. Louis: The C. V. Mosby Company, 1926. Pp. 313.

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Ross H. Skillern, M. D., *Laryngologist, Rush Hospital for Consumption, Philadelphia, Pa.:* "I, myself, had the misfortune to be seized with an attack of Cerebro Spinal Meningitis and after a critical illness recovered. My mainstay during the attack was VALENTINE'S MEAT-JUICE, and I can assure it materially aided in my recovery."

W. S. Tremaine, M. D., *Professor of Surgery, Niagara University; Consulting Surgeon, Maternity, Emergency and St. Francis Hospitals, Buffalo, N. Y.:* "I have used VALENTINE'S MEAT-JUICE for more than ten years. I know that I have saved lives with it when every other form of nourishment was rejected. It is a most valuable preparation, and I constantly use it."

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Miscellany.

Tobacco Smoking and Scholarship.—J. Rosslyn Earp, of Antioch College, has just investigated the long run effect of tobacco on college men. As a result of his research, he announces that those students who inhale the fumes of tobacco, regardless of whether they smoke much or little, have lower scholarship records than smoking students who do not inhale. This fits in with the statement of a German scientist, who recently reported that inhalers take into their systems eight times as much nicotine as smokers who do not inhale, Mr. Earp says.

The effect of smoking is chiefly shown in mental fitness, the experiments at Antioch College indicate. When smokers and nonsmokers were given physical tests Mr. Earp could discover no significant difference between the pulse rates, blood pressure, or heart efficiency of the two classes. But when he looked up scholarship records, covering a long period of time, he found a striking difference in his figures. "Although the number of smokers and nonsmokers in the college is practically the same, yet out of twenty-three students dismissed last year for low scholarship no less than twenty-one were smokers," he says. "As one ascends the scale of scholarship, the proportion of nonsmokers grew steadily greater. And, in general, those who smoke much have lower scholarships than those who smoke little."

The significance of these findings is increased by the fact that they have been carefully subjected to mathematical processes to measure the reliability of the results. Mr. Earp believes that this is the first time that the effect of inhaling on scholarship has been measured, and he thinks that the figures may be "of some importance, since they indicate that the lowered mental efficiency is not just a coincidence but actually a consequence of smoking."—*Science News-Letter,* August 14, 1926.

Residual Effects of War Gas.—The Board of Medical Officers, appointed by the director of the United States Veterans' Bureau to study the residual effects of war gas, expects to complete its studies of chlorine gassing by the first of the year. The Board, which held its first meeting March 9, 1926, is composed of Dr. Allen K. Krause, associate professor of medicine at Johns Hopkins University; Lieutenant Colonel Harry L. Gilchrist, M.C., U.S.A., chief of the Research Division, Chemical Warfare Service, and Dr. Philip B. Matz, chief of the Medical Research Subdivision, United States Veterans' Bureau.

Records show that approximately seventy thousand men were gas casualties of varying degrees of severity during the war, 1,843 of which were from chlorine gas. The War Department has made an investigation of the immediate effects of chlorine gassing in over eight hundred cases, and the present study by the Veterans' Bureau is expected to develop important information pertaining to the residual effects of this gas.

Upon completion of their investigation of chlorine gassing, the board will commence a survey of the cases resulting from phosgene, mustard, and other gases.

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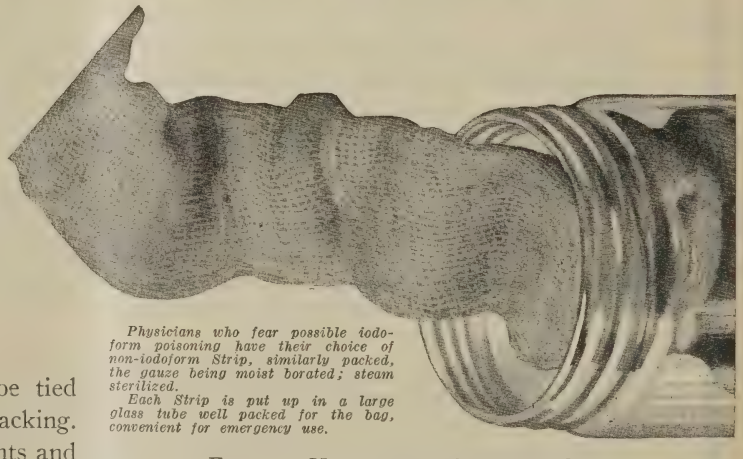

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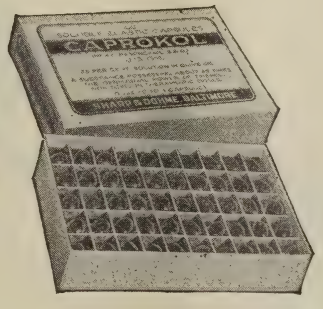

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American Journal Diseases of Children, Vol. 31, No. 2 Feb. 1926.
Jour. A. M. A., March 6th, 1926, Vol. 86, No. 10, p. p. 668-670.
Minnesota Medicine, April 1926, Vol. 9, No. 4, p. p. 156-160.

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Public Health Instruction Extended at Columbia.—Columbia University's public health work, carried on through the DeLamar Institute of Public Health, will be extended this year, it was announced on August 22d by President Nicholas Murray Butler. Its object, said the announcement, is to "extend to the lay public through channels of popular education the benefits of reliable information in the protection and development of human health and in the prevention of disease."

This is in accordance with the provisions in the will of the late Joseph P. DeLamar, under which funds were provided for the institute. The institute is a part of the School of Medicine and is under the direction of Dr. Haven Emerson.

Beginning with the coming academic year the degrees of Master of Science and Doctor of Philosophy will be awarded by the institute. The master's degree will be available to students who have completed a year's study, including three months of practical field, laboratory or administrative work in the summer session. Granting of the degree is subject to the same requirements as are in force in other departments of the university.

"The staff of the Institute of Public Health," Dr. Emerson said, "is now authorized by the university to embark upon the training of sanitarians, health officers, directors of medical services of industrial plants, and vital statisticians, as well as of others who wish to qualify in a postgraduate school after they have graduated as physicians or obtained the degree of B.S. or B.A. and have acquired special additional training in the natural sciences, such as botany, chemistry and physics and also in mathematics.

"The institute will continue to aid in developing public health services, local and national, through a multitude of special health organizations.

"Field nurses of health departments, nutrition workers, bedside nurses of visiting nurse associations are some of the agents, and lectures on tuberculosis, child hygiene and other similar subjects are some of the means by which the institute is able to popularize health education."—*New York Medical Week,* September 4, 1926.

New Publications Received.

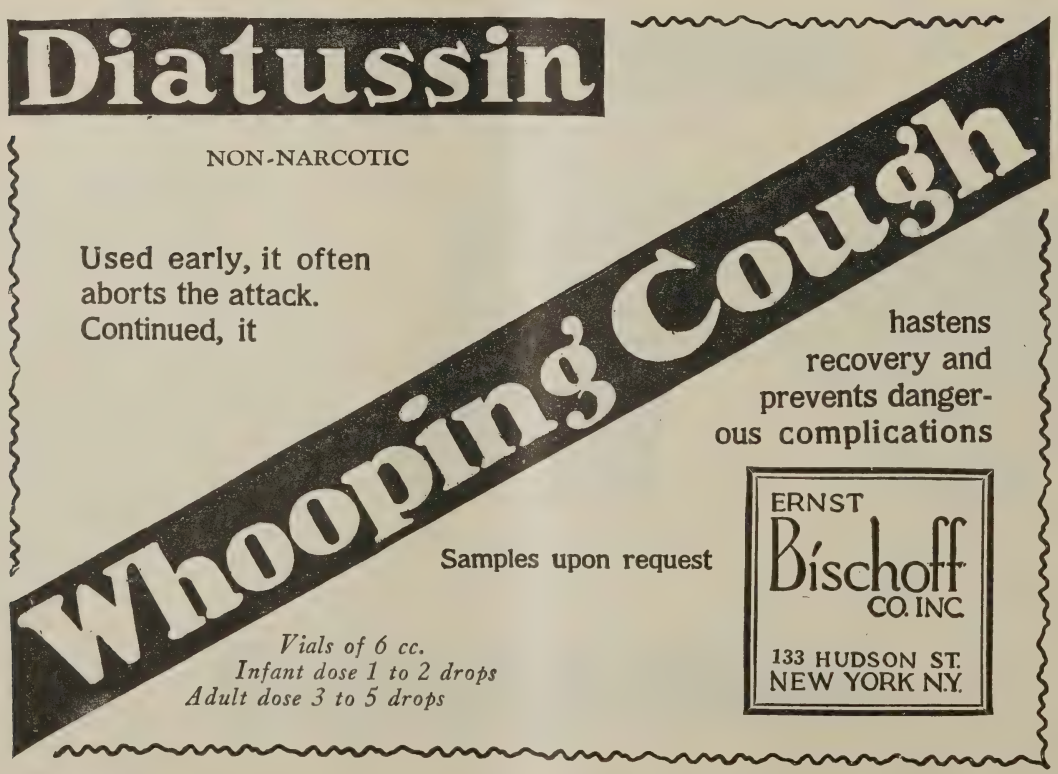
(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

THE SURGERY OF GASTRODUODENAL ULCERATION. By Charles A. Pannett. Illustrated. New York: Oxford University Press, 1926. Pp. 154.

STUDIES IN INTRACRANIAL PHYSIOLOGY AND SURGERY. By Harvey Cushing, M.D. Illustrated. London: Oxford University Press, 1925. Pp. 146.

THE PURPOSE OF EDUCATION. An Examination of Educational Problems in the Light of Recent Scientific Research. By St. George Lane Fox Pitt. Fifth Issue, revised. Cambridge: University Press, 1925. Pp. 94.

PATHOLOGY AND TREATMENT OF THE INFLAMMATORY DISEASES OF THE NASAL ACCESSORY SINUSES. By Prof. Dr. M. Hajek. Translated and edited by Joseph D. Heitger, A.B., M.D. and French K. Hansel, M.D., M.S. Fifth edition, completely revised and enlarged. Volume II. Illustrated. St. Louis: The C. V. Mosby Company, 1926. Pp. 702.



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Miscellany.

Rudyard Kipling on Public Health.—Into his tales Kipling has woven incidents that to the governmental authorities of England's tropical colonies were serious problems in the administration of public health service, writes Dr. Louis J. Bragman (*American Journal of Public Health,* June, 1926). Colonial rulers soon learned that their power in India lay not in the numbers but in the physical strength of their forces. Public health became an item in their administrative program. The struggles they encountered in inaugurating protective hygienic measures and their efforts in combating the tremendous mortality in many instances gave Kipling a background for his stories. In *A Trooper of Horses* he writes: "We have no smallpox or disease here," quoting the words of a native soldier of India. "The doctors are strict and refuse is burned by the sweepers. It is said that there is no physician like fire. He leaves nothing to the flies. It is said that flies produce sickness, especially when they are allowed to sit on the nostrils and the eyes of children or to fall in their milk pots." In the *Tomb of His Ancestors* Kipling vividly describes the efforts with final victory to overcome the superstitious fear of vaccination in an out of the way jungle village. The people said: "One came to us in the name of the Government with little ghost knives and a magic calf, meaning to turn us into cattle by the cutting off of our arms." To this the official, rolling up his sleeves and showing his vaccination scars, replied: "You know the Smallpox who pits and scars your children so that they look like wasp combs. It is an order of the Government that wohso is scratched on the arm with these little knives which I hold up is charmed against her. All Sahibs are thus charmed, and very many Hindoos. I myself will stay among you while this man scratches your arms with the knives. In three or it may be five or seven days, your arms will swell and itch and burn. That is the power of the Smallpox fighting in your base blood, against the orders of the Government." The people were finally reassured, and soon it was considered a mark of great honor to have a vaccination scar, and the practice became almost universal.

The Indian doctor in *The End of the Passage* tells of the gruesome ravages of cholera: "About fifteen deaths a day don't incite a man to shoot anything but himself. And the worst of it is that the poor devils look at you as though you ought to save them. Lord knows, I've tried everything. My last attempt was empirical, but it pulled an old man through. He was brought to me apparently past hope, and I gave him gin and Worcester sauce with cayenne. It cured him; but I don't recommend it." When this doctor was asked how the cases ran, he replied: "Very simple indeed. Chlorodyne, opium pill, chlorodyne, collapse, nitre, bricks to the feet, and then the burning ghat. The last seems to be the only thing that stops the trouble. It is the black cholera, you know." The same scourge and its ravages are described in the poems, *Death Bed, Cholera Camp,* the *Spies' March,* and *Natural Theology.* A picturesque interpretation of the plague and its epidemiological and preventive aspects is also given in the stories entitled *A Germ Destroyer,* and *A Doctor of Medicine.*

In *William the Conqueror,* one of Kipling's masterpieces, the Delhi sore, made epidemic by a protozoan parasite, and its disfiguring consequences, is mentioned. "Her face was as white as bone and in the center of the forehead was a big, silvery scar about the size of a shilling—the mark of a Delhi sore, which is the same as a 'Bagdad date.' This comes from drinking bad water and slowly eats into the flesh until it is ripe enough to be burned out."

Concerning typhoid fever it is stated in *By Word of Mouth,* "Nearly every household in India knows that doctors are very helpless in typhoid. The battle must be fought out between Death and the nurses minute by minute and degree by degree."

The Sixty-eighth Congress and Health.—"The Sixty-eighth Congress, which became a matter of history on March 4, 1925," writes James A. Tobey in the *American Journal of Public Health* for April, "will probably be remembered, if at all, for the legislation which it failed to pass, rather than for that which it did pass." Dr. Tobey goes on to review this legislation as a whole.

The measures relating to public health which became laws included prohibition of pollution of coastal waters by vessels; extension of the maternity and infancy acts to certain of the territories; a vocational rehabilitation act; provision for participation in an international narcotic conference; prohibition of the importation of crude opium; codification of laws pertaining to veterans; various appropriations for public health, usually less than in previous years; a special appropriation of $275,000 for plague prevention; a special appropriation of $57,600 for investigation of oyster pollution; more hospitals for veterans; establishment of a dairy bureau in the Department of Agriculture; and a number of other measures of less importance, though several bills relating to public health in the District of Columbia, such as control of milk, dentistry, optometry, and venereal diseases, are of great significance to people of that district.

Among new laws of general scope are acts relating to immigration; reduction of taxes, which, incidentally, failed to incorporate a provision reducing tax on physicians who use narcotics in a professional capacity as had been requested; the bonus for war veterans; and reorganization of the consular service on an efficiency basis. This last law, states the writer, might be a good model for the federal personnel engaged in public health work. The child labor amendment to the Constitution, which was passed and submitted to the States, was not accepted by them.

"Although many measures which should have been passed were not, some of those which were not should not have been, so that there was positive accomplishment in their failure." Especially notable in this connection was the defective bill for a new department of education and relief. Another bill for a new department of education with a provision for a huge grant to the states, partly for development of physical education, was also not acted upon. Other bills not acted upon included measures to reorganize the Public Health Service; to grant com-

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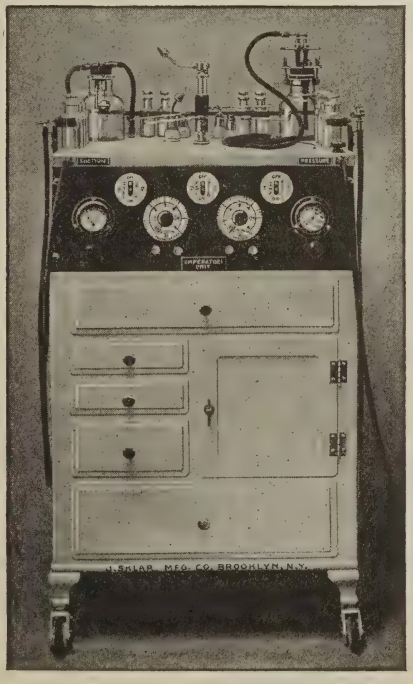

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missions to the sanitary engineers of the Service, which all seem to agree they should have; investigation of medical diploma mills; promotion of rural hygiene; the usual bill for a federal health department; a bureau of medical research; and transfer of the bureau of prohibition.

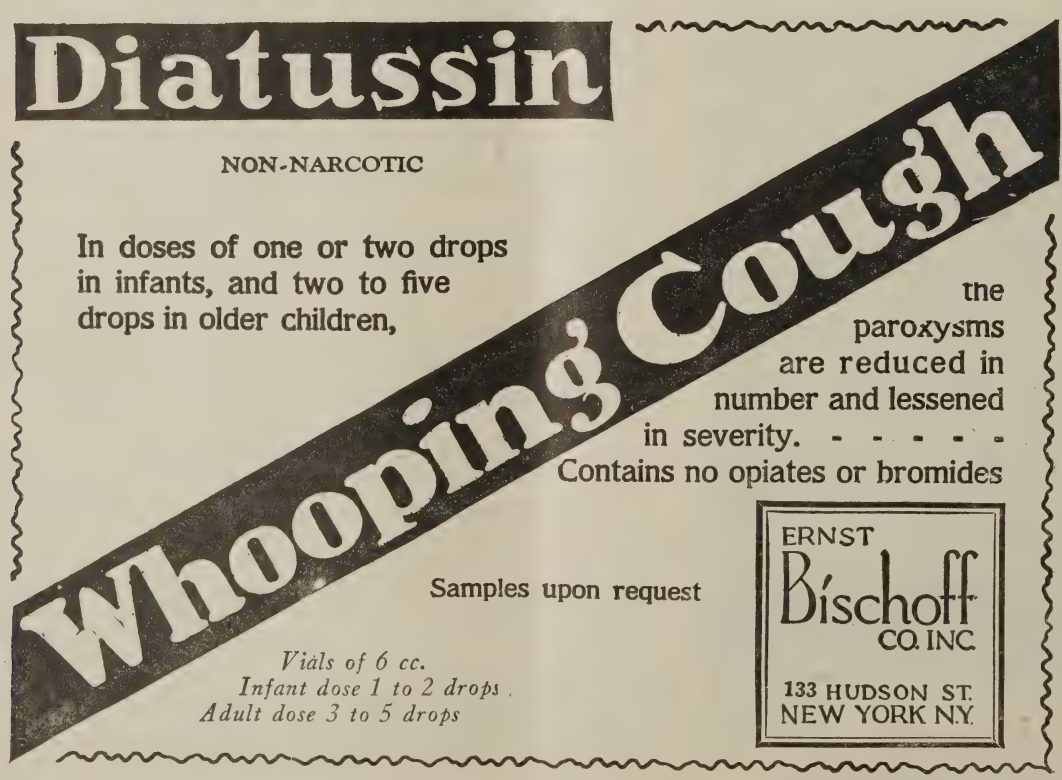
The second session had about twenty-five more. Of this total number, only a dozen or so were enacted into laws. In the previous Congress there were thirty-one new laws relating directly or indirectly to national health, although this number represented only about 3 per cent. of all the laws adopted by this Congress.

Guy's Hospital Bicentenary.—Guy's Hospital, London, which reaches its two hundredth anniversary this year, owes its origin to the kindly impulse of a sympathetic man, who, in passing over London Bridge, observed a depressed looking person gazing gloomily into the Thames. Thinking the low spirited figure might be poverty stricken and contemplating suicide, the benevolent stranger offered a small coin to the dejected man. But the melancholy man was not in need of money; it was Thomas Guy, who was very rich, but who had found that, after having attained what had been his one aim in life, which was to become wealthy, he had not thus achieved happiness. The kindly act of the passerby brought a new thought into the mind of the unhappy man, who saw in a flash that with money one really can buy happiness—for others. He took steps immediately to establish a hospital, paying for it and for its maintenance, and willing $1,100,000 for its upkeep.—*N. Y. Times.*

Skull Operations Fail as Crime Cure.—Operations on the skull to remove the cause of crime are unwarranted medical practice, in the opinion of Dr. Shepherd I. Franz, an expert in the reeducation of the damaged brain.

The supposition that a bony protuberance of the cranium or some malformation due to accident may press on the brain and be the specific cause of wrongdoing is rejected by Dr. Franz and relegated to the limbo of phrenology or like pseudoscience. Surgeons of questionable ethical standards, with prospects of a high fee, have been willing to operate on a criminal, the purpose in part being to influence a trial court in the direction of leniency. In some cases of this sort the patient, profoundly influenced by so serious an operation on himself, has actually been led to believe that the treatment has cured him. Thus purely by suggestion he deserts the criminal life. To this extent is the cranial operation of value.

Extended experiments in brain operation have convinced Dr. Franz that the upper brain structure works generally as a whole and not in specialized departments. Damage or pressure on one spot does not throw any one faculty alone out of commission, nor does any single faculty or sense belong solely to one unique location. Removal or destruction of a small special brain area will seriously upset the entire mental function, but the patient can be reeducated to perform all his duties with other cerebral material. Upon this assumption immorality or crime tendency is likely to be a feature of the entire cerebrum, and not amenable to surgical operation.—*Science News-Letter,* August 14, 1926.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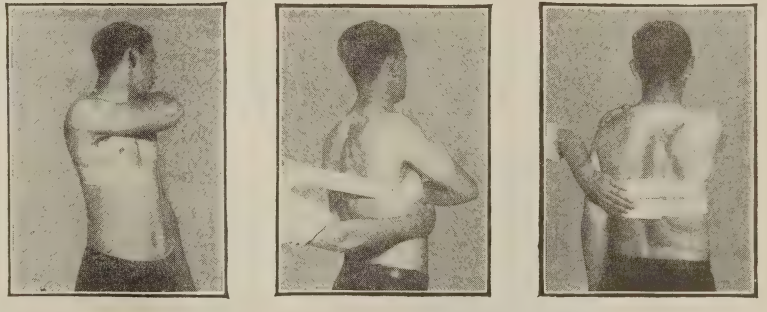

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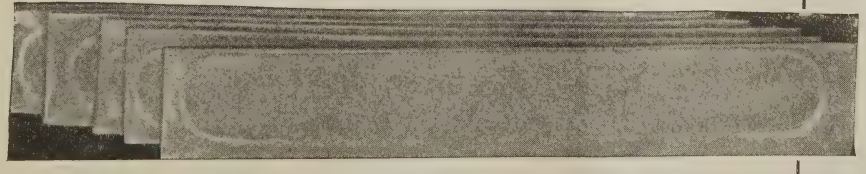

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Origin of the Corset.—The word "corset" was pronounced for the first time in the reign of Charles V; we find it in a work printed in 1510, that is, at the beginning of the sixteenth century; but from the end of the past century they had already been wearing in France corsages tightly laced and trimmed in front, which the ladies wore between their chemises and their dresses. They were generally called *corps piqués* (quilted bodices). Although they were not stiffened with steel braces or whale bones, like the Venetian corsages, the *corps piqués,* if we can believe a gossip of the court of Louis XII, were so tight all the way up that the women could hardly breathe and often suffered great distress when putting them on. The first idea of the corset came when close fitting dresses were in style, dresses *justes au corps.* It was in the reign of Louis VI and his successor, that to improve the figure the idea was conceived of wearing a corsage to mould the form. Under Charles VI ladies used stuffed corsages to simulate full figures, and wore high necked gowns. Isabel de Bavière and, under Charles VII, Agnes Sorel, while reducing their decolletée effects, cramped their waists more and more in their corselets, equipped with steel braces and a *coche* or busk of thin wood in front. In the reign of Henry III appeared the real bodice of whale bone worn by men as well as women. It is said that Catherine de Medici must have imported this style from Italy; for a time it became all the rage. Its results were disastrous. It was at this time that Ambroise Paré, physician of the Hôtel Dieu, showed his pupils on the dissection table the forms of young women whose corsets had so bound, compressed and displaced their vertebræ that they were hunchbacked and miserably emaciated for lack of nutriment. Paré was thus the first doctor who took up arms in the name of health against the corset.—*Translated and abstracted from Aesculape.*

Professional Occupations Do Not Harm Women's Health.—Women factory workers have always received their full quota of medical solicitude, but now the health status of the women in the brain working professions comes in for its share of attention.

Taking a group of school teachers as typical subjects for observation, Dr. Letitia Fairfield, formerly medical director of the Women's Royal Air Force, declares there is no reason to believe the occupation of these women has had any harmful effect on their health. Women, she says, start out in their working careers with slight initial handicaps in the shape of a higher sickness rate in all the diseases than men. They have a liability to a special group of ailments of their own and a tendency to age sooner and more rapidly than men. "Nevertheless," maintains Dr. Fairfield, "my conclusion is that all these handicaps have been exaggerated and can be considerably reduced by improved hygiene." Men have always been more sensible than women in the matter of clothes, exercise and diet, but every year the feminine attitude toward these matters becomes more intelligent. "Without undue optimism," she says, "it seems reasonable to consider that preventive medicine has yet much to contribute to the problem of maintaining the physical efficiency of the professional woman."—*Science News Letter,* September 4, 1926.

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Wage Earning Mothers in Philadelphia.—A document of unusual interest and importance to public health has recently appeared in Gwendolyn S. Hughes's *Mothers in Industry,* published by the New Republic Publishing Company. This is a study of 728 wage earning mothers, all of whom had children under sixteen and all of whom were employed outside their homes when the study was made, or had been so employed the year before. The study was begun November 20, 1918, and ended August 28, 1919. In making the canvass, sections largely Hebrew or Italian were omitted because it is not customary for women of these groups to work outside their homes. No colored women were included.

One of the first things revealed by the study was that the work of these women was financially necessary to the upkeep of their families. Statements as to why they had taken up work outside their homes was obtained from 725 of the women, and the following were the reasons given and the number of women so working: Insufficient wages of husband, 208; death of husband, 164; illness of husband, 101; desertion by husband, 94; nonsupport by husband, 79; personal preference, 79. In three fifths of these cases, owing to the husband's illness, death, desertion, or refusal to support the family, there was no income at all from that source, and in nearly one third, the husband's earnings were insufficient for the family upkeep. In eleven per cent. of the cases the mothers took outside work to give their children educational advantages, build a home, etc.

A second feature of the report is the fact that the study showed that the wage earning mother does not cease to be also the homekeeper. She only adds another job to her original one. It might be supposed that this double work for the mother would show in bad effects, health and otherwise, upon the mother herself and her children. This brings us to the medical significance of the report with which we are concerned here. There were 1,352 children living in the homes studied. Of these twenty-three per cent. were being cared for during their mothers' absence, in nurseries or in neighbors' or relatives' homes; seventy-seven per cent. stayed at home, usually in charge of some relative or person living in the same house. The children's health did not seem to have fared badly, the report states. "Health defects seem to be comparatively infrequent among children in these households, since in only 117 (sixteen per cent.) of 728 households was one child or more reported as suffering from a health disability at the time of the visit."

An inquiry into the health of the mothers, exclusive of their maternity experiences, showed that their general record during the time covered by the study was above that of housewives generally. Illness within the past year was reported by forty-four per cent., as against sixty-three per cent. of the housekeepers in a study made in Kensington for a Pennsylvania commission, covering 734 households. The report goes on to say: "Either the wage earning mothers have failed to report all of their illnesses, or they are physically stronger than the women who stay at home. It is probable that women with greater resistance work in industry because they consider themselves physically fit to stand it."

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Cancer Serum Tests Make Animals Immune.—Cancer serum that has cured cancer in a number of laboratory rats and has rendered them immune to the disease over a long period of time, is the latest cancer news reported by Dr. Thomas Lumsden, working at the Lister Institute, under a grant from the British Empire Cancer Campaign. Dr. Lumsden has been working for several years on the possibility of serum treatment.

In recent experiments he has fought cancer cells with a number of different antisera in an attempt to find out which would be the most effective against the malignant cells, and also in the hope of learning the mechanism by which immunity to cancer is acquired. Fifty rats, all of them with a cancer in each hind foot, were used in one series of tests. Antiserum of a rat or mouse cancer was injected in one foot of each rat. In every case the cancer of the treated foot was cured, and in addition the untreated tumor in the other foot also went away a few days later.

Dr. Lumsden had previously reported that rats treated in this way "were found to be absolutely immune to the tumor concerned." "It is now possible to state," he says, "that this immunity is of long duration. A test inoculation was given to fifty rats six months after their recovery. Of these, only two developed progressive tumors. The other forty-eight were still completely resistant to a cancer which grew rapidly in all of twelve normal animals inoculated with identical material at the same time."

Recent efforts to go further and use serum to fight human cancer are described in a report from Prof. Blumenthal, of the University of Berlin. Prof. Blumenthal long ago proposed that cancer patients might be injected with an extract of the tumor removed by operation, in order that they might become immunized. This method has lately been taken up with success by Dr. Thies, another German scientist, he reports. The chief drawback in this method is that a cancer used for this purpose must not be advanced in decomposition. This means, he says, that only a few operative cancers are adapted to this treatment.—*Science News-Letter,* August 14, 1926.

Increase in Rabies in Dogs.—The City Department of Health considers the prevalence of rabies in dogs in New York as startling, and the increase in the number of dog bites as alarming. In the first six months of this year, 200 of the 395 dogs examined by the Bureau of Laboratories were positive for rabies, while during the first six months of 1925, only twenty-five among the 152 examined were positive. This is the first time in a long period that the number of positive specimens submitted for examination exceeded the number of negatives. Since 1920 there has been a constant increase in the number of persons bitten by dogs from 3,049 to 6,714, and 4,077 persons were bitten in the first half of 1926. There was only one human death from rabies in 1925, and none to date in 1926. The prevalence of rabies among dogs indicates, however, that in every instance in which the condition of the dog responsible for an injury canont be definitely ascertained, prophylactic antirabic treatment should be administered.—*Health News.*

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

TRANSACTION OF THE AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION FOR THE YEAR 1925. Volume 41. Printed for the Association, 1925. Pp. 216.

NURSERY GUIDE FOR MOTHERS AND CHILDREN'S NURSES. St. Louis: The C. V. Mosby Company, 1926. Pp. 206.

TALL TIMBERS. By C. C. Sherlock. Boston: The Stratford Company. 1926.

PHYSIOLOGICAL CHEMISTRY. A TEXTBOOK AND MANUAL FOR STUDENTS. Fourth Edition, Illustrated. New York: William Wood and Company, 1925. Pp. 1233.

RADIOTHERAPY IN RELATION TO GENERAL MEDICINE. By Francis Hernaman-Johnson, M.D. New York: Oxford University Press, 1926. Pp. 211.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Reprints, Vol. LVI. The Rockefeller Institute for Medical Research, 1926. Pp. 630.

PRINCIPLES OF HUMAN PHYSIOLOGY. By Ernest H. Starling, C.M.G., F.R.S., Sc.D., F.R.C.P. Fourth edition. Illustrated. Philadelphia: Lea and Febiger, 1926. Pp. 1074.

BLOOD CHEMISTRY. COLORIMETRIC METHODS. FOR THE GENERAL PRACTITIONER. New York: Paul B. Hoeber, Inc., 1926. Pp. 129.

PRINCIPLES OF HUMAN PHYSIOLOGY. By Ernest H. Starling, C.M.G., F.R.S., M.D., Sc.D., F. R. C. P. Fourth edition. 570 illustrations, ten in color. Philadelphia: Lea & Febiger, 1926. Pp. 1074.

MORRIS'S HUMAN ANATOMY. Edited by C. M. Jackson. Eighth Edition. 1,164 Illustrations, 515 Printed in Colors. Philadelphia: P. Blakiston's Son & Company, 1925. Pp. 1507.

ANATOMY OF THE HUMAN BODY. By Henry Gray, F.R.S. Twenty-first Edition. Thoroughly Revised and Reedited. 1283 Engravings. Philadelphia and New York: Lea & Febiger, 1924. Pp. 1417.

SURGICAL AND MECHANICAL TREATMENT OF PERIPHERAL NERVES. By Byron Stookey, A.M., M.D. 217 Illustrations, Eight in Color, and Twenty Charts. Philadelphia and London: W. B. Saunders Company, 1922. Pp. 475.

BAILEY'S TEXTBOOK OF HISTOLOGY. Revised and Rewritten by Oliver S. Strong, A.M., Ph.D. and Adolph Elwyn, A.M. Seventh Edition, Profusely Illustrated. New York: William Wood and Company, 1926. Pp. 939.

DIAGNOSE UND THERAPIE DES EKZEMS. Von Dr. S. Jessner. Sanitätsrat Dr. Jessner's Dermatologische Vorträge für Praktiker. Heft 14 und 16 dritte verbesserte Auflage. Leipzig: Curt Kabitzsch, 1926. Pp. 173.

DEVELOPMENTAL ANATOMY. A TEXTBOOK AND LABORATORY MANUAL OF EMBRYOLOGY. By Leslie Brainerd Arey. Four hundred and nineteen illustrations, Many in Color. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 433.

BAINBRIDGE AND MENZIES ESSENTIALS OF PHYSIOLOGY. Edited and Revised by C. Lovatt Evans, D.Sc., M.R.C.S., L.R.C.P., F.R.S. Fifth Edition. Illustrated. London and New York, etc.: Longmans, Green and Company, 1925. Pp. 508.

THE ANATOMY OF THE NERVOUS SYSTEM FROM THE STANDPOINT OF DEVELOPMENT AND FUNCTION. By Stephen Walter Ranson, M.D., Ph.D. Second Edition, Revised. Two hundred and eighty-four Illustrations, Some in Colors. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 421.

CUNNINGHAM'S MANUAL OF PRACTICAL ANATOMY. Revised and Edited by Arthur Robinson. Seventh Edition. Volume I, Superior Extremity; 203 illustrations, many colored. Pp. 451. Volume II, Thorax and Abdomen. 231 Illustrations, many colors. Pp. 524. Volume III, Head and Neck. 233 Illustrations, many colored. Pp. 568.

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"How to Deal with the Doctor."—We have reams of advice to the doctor, even entire books, telling him how he should deal with the patient. Mr. Harrison Rhodes, who it seems has written an essay on *How to Be Ill*—which we shall look up later—turns the tables and advises the patient through *Scribner's Magazine* "How to deal with the doctor."

It will be recalled that Smollet has a character indite a letter to his doctor saying, "The pills are good for nothing; I might as well swallow snowballs. . . . Prithee send me another prescription. I am as lame and as much tortured in my limbs as if I was broken on the wheel." Mr. Rhodes confesses to a fellow feeling with the patient. "Many doctors need to be bullied through possibly more patients," he tells us. "It is certain that doctor baiting is a favorite sport with many ill people when they are up to it and have the courage. . . . And yet it is not quite fair. . . . Of course it does not very often come to pitched battles between the doctor and his patient. . . . There are patients who lose much sleep and by working the night nurse hard get their money's worth . . . and it is quite possible that many a fretful invalid rests easier because it has been possible by telephone or otherwise to call to the sick room the doctor from a sound sleep."

"Doctors often know that they are not infallible; in fact it may be guessed that sometimes in their hearts they believe themselves pretty ignorant. But we wretched creatures who call them in are so apt to insist that they shall know everything." But even if the doctor is not omniscient it is pleasanter and no doubt wiser for the patient to believe that "the doctor, or some one, knows it all. At these moments life, if it lasts, should be made more tolerable for the invalid by every flattery, every sacrifice, every lie if necessary—the world owes him that much."

But with convalescence the high comedy appears "with interludes of tenderness, and of real feeling." Old novels are full of this kind of thing, says Mr. Rhodes, citing some of them.

"To those who have a taste for it," says Mr. Rhodes, "there is nothing like sending for the doctor. . . . If a female patient can fall in love with her doctor that will undoubtedly give her great satisfaction and may be strongly advised. That he should fall in love with her is of more uncertain utility; in fact it may be doubted if he will function any better, or indeed quite as well. But she will function better. Perhaps some inner glow, some magic secret metabolism, may transform her to a well woman." This sounds as though Mr. Rhodes had been reading some recent medical literature in which the effect of love in increasing metabolism has been set forth.

While he concedes the morality of the profession he is inclined to the belief that the famous "bedside manner" of the successful practitioner is evidence of his willingness to resort to "the therapy of love," even though it be not mutual.

"The general practitioner, becoming rarer every year should be crowned," thinks Mr. Rhodes, "before

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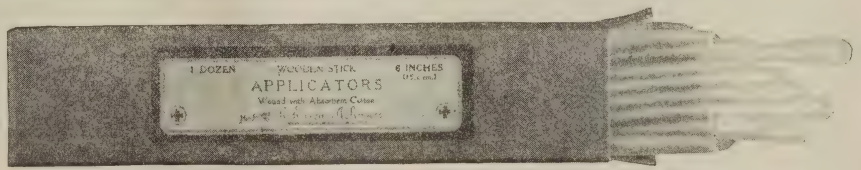

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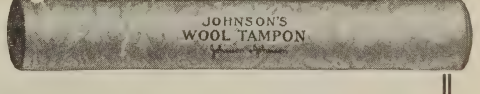

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he passes in a cloud of specialists and odd and slightly illegitimate physicians of all kinds"; a kindly sentiment which the medical profession will applaud, particularly the general practitioner whose career is "sometimes dull but glorious."

Sometimes the doctor, "by the strange clairvoyance which doctors often have, is a great diagnostician, and knows almost at sight of you that your trouble is with the glands in the lobe of the left ear."

"Nothing is more unfair or more irritating to a regular practitioner than to find that his patient is being secretly treated by any of the professedly heretical healers." . . . It is foolish . . . to believe in the newspaper advertisements or the signs on the trees," says Mr. Rhodes.

"At any rate it often really passes the time agreeably to have the doctor in. And it is probable that in the end one does not lose much by cheerfulness."

An Aid to the Medical Practitioner.—Physicians treating venereal disease cases have frequently expressed a need for a pamphlet containing instructions and advice to be given to venereal disease patients. Due to the nature of these diseases and the regimen which proper treatment requires, the need for such a publication has long been apparent. Some time ago the United States Public Health Service prepared a pamphlet known as *Important Confidential Information* expressly for this purpose. The leaflet is in two parts, one dealing with gonorrhea and the other with syphilis. Advice is given among other points on the following: Importance of continuing treatment until cured, proper diet while under treatment, proper care to prevent the spread of the disease, the futility and danger of quacks and self treatment, sex conduct and marriage.

Many physicians have found this publication a valuable aid in securing the cooperation of the patient while under treatment and also as an aid in holding the patient until cured or rendered noninfectious.

The Quarterly Review of Biology.—In commenting on this journal, which is published in Baltimore by Williams and Wilkins Co. and edited by Dr. Raymond Pearl, *The Science News-Letter* for August 7, 1926, says:

Dr. Pearl's new journal occupies a position among scientific periodicals comparable to the *American Mercury* in the realm of regular literature. He has quite apparently determined that his publication shall follow other lines from those of the usual hidebound journal of science. The ground covered spreads beyond the boundaries of the lay conception of the biological sciences into psychology, paleontology, anthropology and geographical distribution, giving much needed correlation to these allied branches. There is an advisory board which consists of men who are the last court of appeal in each of these varied fields, as well as in the different divisions of biology proper.

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Miscellany.

Philippe Hecquet and the Treatment of Cataract.—In 1862 a surgeon of Turin, Sperino, proposed repeated puncture of the aqueous humor for the treatment of cataract. Such an idea had been put forth more than a century earlier by Hecquet, not only to cure cataracts, but for preventing them, or, according to his own phrase, for dissipating the first thickening. It was in a letter addressed to Silva on March 27, 1729, that Hecquet called attention for the first time to his new method of treatment, which consisted in puncture of the eye to empty the cavities and evacuate the corrupt humors. This letter may be found in the second edition, published in 1730, of the work which Hecquet had published in 1712; namely, *Of the Digestion of Food and of the Maladies of the Stomach, following the System of Trituration or of Pulverization.* It accompanies a reply to Silva on bloodletting, and four letters on revulsion, bloodletting, and kermes-mineral. Hecquet proposed, moreover, to make in the cavities in the eye injections of plantain water, euphrasia, celandine, fennel, flower of camomile, etc.; then he advised recourse after the operation either to internal remedies chosen from among the alkalines or the absorbents, or to local applications of juice of woodlice, of gall of the pike, carp or even man, all methods praised in ancient pharmacopeias, of which Hecquet in this respect received the heritage.—*Aesculape.*

The Colony of St. Fargeau at Ponthierry.—This institution devotes itself entirely to the care and cure, if possible, of paralytics, especially children who have suffered from poliomyelitis. It was founded by a woman all of whose limbs had been paralyzed, but who was cured by the proper care and surroundings. She has devoted her life and her resources to making available to others, especially those who could not afford them, the care and treatment that restored her to a useful and active life.

The colony of St. Fargeau is situated in the country, yet near enough to Paris for visits from that city's leading physicians and surgeons. As much of the reconstruction work as possible is carried on out of doors. The institution is attended by a staff of capable physicians, nurses, and rehabilitation aides, and equipped with the best and latest scientific apparatus, including that for electrotherapy, radiographs, orthopedic correction, and other necessities. A recent report states that nine out of every ten patients leave the institution practically cured. "Many children half crippled upon arrival have gone from the Colony walking easily, without brace or crutch; others, who have been cripples for several years, are walking with crutches or canes, and are improving under their daily lessons in muscular reeducation. Adults who have not walked for years can stand and move about in a fairly normal manner. Some who have come to the institution apparently hopeless cripples, have gone out from it able to live normally, to follow a profession, to build a home, and to have a family."

The Colony is at present inaugurating a campaign to solicit funds for a necessary extension and enlargement of its work. So great has become the number of applicants for admission that many are refused daily. The report states that there is need of more and newer equipment, of a larger staff, and of more visits from the great specialists. The fact that many of the patients are necessarily housed and treated free of charge, or for very small payments, makes the problem of support more difficult. The Board of Directors has estimated that several hundred thousand francs must be secured as soon as possible to ensure the continuance of the work.

Yankee Remedies Not Out of Use.—To the generation that purchases ready made medicine from the corner drug store, ginger tea, suggested as a remedy for President Coolidge when he had a cold, by his father in the wisdom of New England tradition, brings back a whiff of the times when folks dipped their own candles and spun their own cloth. But the days of oldfashioned, homely remedies are not so far gone as that. Several of these have passed even modernism's test, and have taken their places on the drug store's shelves. Among these are castor oil, mustard plaster, rhubarb and soda, and others of like type. Many oldtimers still use oatmeal poultices, sassafras, camomile, saffron and sage tea.

A sty may be driven away, according to early New England beliefs, by rubbing it with a wedding ring, or touching it with a black cat's tail. An old time cure for corns was vinegar and breadcrumbs. Tobacco was good for toothache, juice of dilly flowers for earache. Nosebleed may be stopped by dropping a key down the back, or by tying a cord around the little finger, the left one for the right nostril, and vice versa. Red flannel and a rubbing with goose grease will cure sore throat, and in the early days every good housewife hoarded her goose fat for this purpose. As soon as spring came, she also started mixing sulphur and molasses to give to the family for purifying and nourishing the blood, and so warding off "spring fever."

The principle of vicarious suffering was strong in early times. When a child had fits, the parents would give it a puppy to play and sleep with, expecting the dog to "take on" the child's malady. When the animal died, the child was supposed to be cured. People still may be found who wear a coin around their neck in the belief that it will absorb diseases coming the wearer's way, as evidenced by its turning black. Some rheumatics carry potatoes in their pockets, for, by becoming hard, the potato absorbs the trouble. It used to be customary for elderly women to sleep with a pair of scissors under the pillow "to ward off rheumaticks." An onion in the pocket was said to keep off fits, camphor gum or brimstone would protect from smallpox and other contagious diseases, and so would sulphur bags worn about the neck and sniffed occasionally.

Long ago the public heard the last of the "blue glass craze," but once it was as popular as the modern x ray. In the sixties or seventies, a physician claimed to have discovered that the blue rays of the sun posessed curative powers. Thereupon New Englanders had blue panes put into their windows. Blue windows are still to be found in houses erected half a century ago.—*New York Times.*

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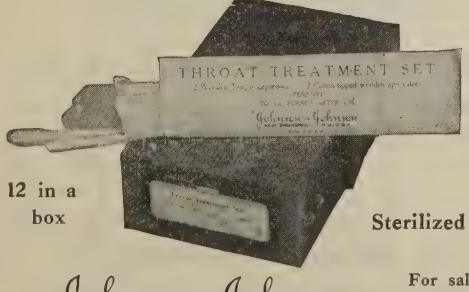

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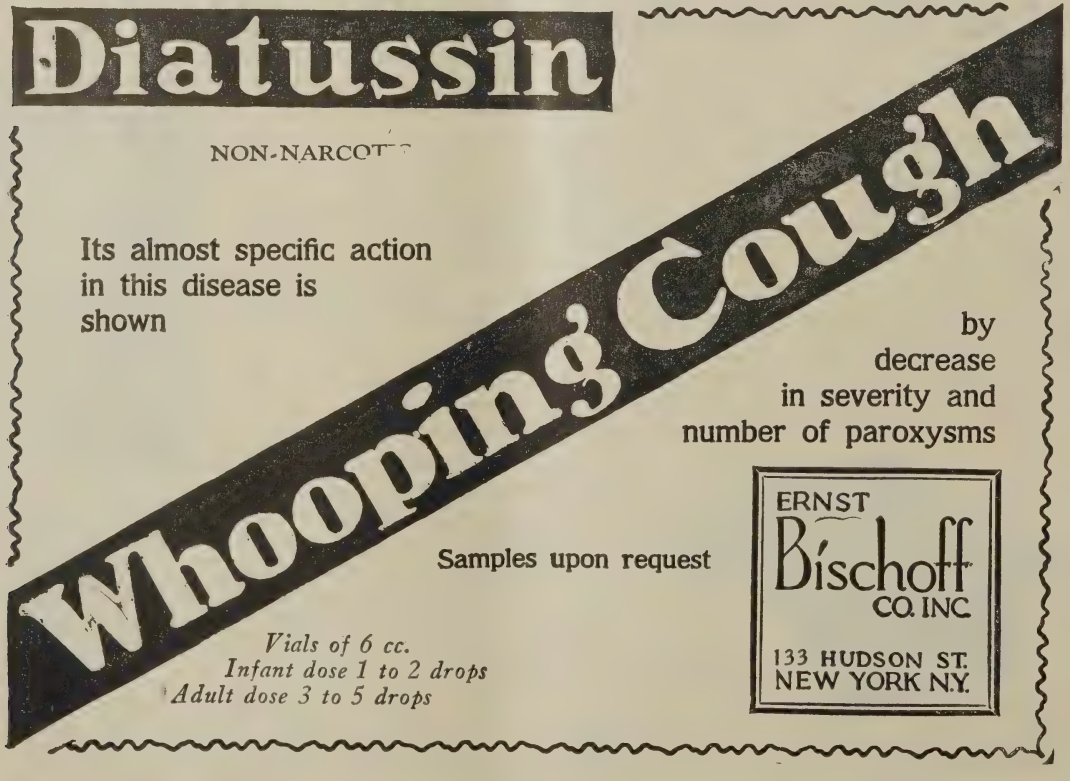
English Hospitals for Seamen.—At the opening of the nineteenth century after twenty-five years of intermittent war had brought to Europe a social and commercial distress even greater than it is today, writes Sir James Michelli, C.M.G. (*World's Health,* January, 1926), there were to be found in the streets of London many poor mariners left friendless, homeless and without work. Illness and disease afflicted numbers of them, and there was no provision for the alleviation of their sufferings. In 1818 a small band of philanthropists, among whom was William Wilberforce, conceived a plan for the establishment of a hospital for their relief. Some of these men had been themselves sailors, and so knew that the only way to allay the suspicion of the sailor for hospitals was to have one on a vessel in the Thames. At the end of three years, negotiations secured for this purpose a wooden man of war, the *Grampus,* which was loaned by the Admiralty and fitted up as a hospital from the funds of the new Seamen's Hospital Society.

The *Grampus* was moored in the Thames off Greenwich, since this was the central point of the largest wharves of the port at that time. The lower decks were made into wards, and the top deck covered with a canvas shelter for the convalescents. Furthermore, the society undertook to find jobs for men discharged from hospital, or, if they were suffering from an incurable disease, to arrange for transportation to their own country or district. Particular attention is still paid to this aspect of the work.

In 1821 hospitals were far from being what they are today. The low ceiled wards of the *Grampus* were lit by lamps burning sperm oil and operations had sometimes to be performed by candlelight. The only means of communication with the mainland was by boat, and patients were brought to and from the hospital in row boats and hoisted up a steep gangway onto the deck. One of the old reports reads: "The Captain Superintendent of the vessel presents his compliments to the Committee of Management and regrets that he cannot appear before them owing to the presence of ice in the river." In 1831 a surgeon complained that he had only six nurses to care for 180 beds and the Committee allowed him to engage three more, "with a man for night duty who shall also undertake the work of barber."

In 1832 the Admiralty supplied a larger vessel, the *Dreadnought,* which had taken part in the battle of Trafalgar. In the same year the Seamen's Hospital Society became incorporated under act of Parliament; also a member of Lloyd's, John Lydekker, bequeathed to the Society his entire fortune consisting of a fleet of merchant vessels. At his death these ships were sent for sale throughout the world and this with their cargoes brought a sum of 55,000 pounds sterling. After twenty-five years, the *Dreadnought* gave place to the *Caledonia,* which took over the name, however, of her predecessor. By 1868, although there had been slight progress in hospital care and treatment, it became evident that the hospital must be moved ashore. The ship's decks were found to have all the conditions favorable to the dissemination of infectious diseases. Ventilating facili-



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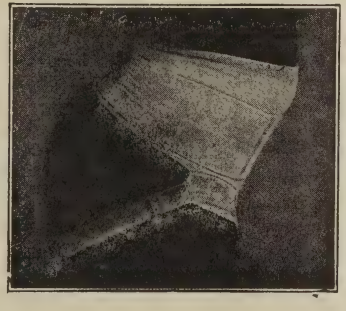

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ties were poor, the noise from an adjacent shipyard was very disturbing to both patients and staff, and the accommodations for the nurses precluded the application of the best type from that profession.

So, in 1870, the few remaining pensioners who were inmates of the Royal Hospital, Greenwich, were sent home, and the use of the infirmary of that institution was granted to the Seamen's Hospital Society. The name of Dreadnought was retained for the new hospital, and remains to this day for the building which is still the parent of the corporation. Sir James relates that when he first entered the service of the Society in 1878, he can remember a man who sat at the front door of the hospital on a low stool, on each side of which was a wicker basket. One of these contained the instruments from the operating theatre which were to be cleaned. This was literally performed by "spit and polish," and the second basket returned to the theatre with its load of "cleaned" instruments, to be used in the operations of that day.

In place of one ship or one building, there are now six hospitals and a dispensary under the control of the corporation. All are served by staffs of eminent physicians and surgeons with the latest devices of modern medical science. The Dreadnought Hospital at Greenwich, with 250 beds, the Albert Dock Hospital, with fifty beds, in the midst of the wharves and keys, and the new Tilbury Hospital, with fifty-six beds, serve every port of London. Moreover, seamen come to these hospitals from ports all over the English coast. There are also two institutions for the treatment of special diseases. These are the Hospital for Tropical Diseases, Endsleigh Gardens, Euston, London; and King George's Sanitorium for Sailors, with eighty beds, at Bramshott Place, Liphook, Hampshire, which cares for the tuberculous cases. The society's dispensary in the East India Dock Road, London, is open daily; and high in the Kentish hills is a convalescent home given to the society in 1918 by Mrs. L. G. Angas, whose name it bears. There are resident medical officers at all five hospitals; during the course of the past year, 24,500 patients passed through the society's hands. The Seamen's Hospital Society receives seamen of all nations, creeds, and races, and no sailor is ever asked to pay anything to meet the cost of his illness. The institutions are supported in part by the endowment fund, but most of the funds are supplied by voluntary contributions.

Medical Treatment on the Amazon.—William Montgomery McGovern writes, in his series of special articles in the *New York Times* on his experiences in the Amazon region, of a visit made to him by a tribal medicine man. He was suffering from a slight attack of neuralgia, and, as his own medicine seemed ineffective, he called in one of the tribal doctors, who are also tribal priests. In many cases this important personage rivals or even overshadows the chief. He found that in this region the natives had the same word for jaguar and medicine man. The witch doctors are supposed to take on at night the form of jaguars and to roam the forests.

The medicine man came to the camp and passed his hand over the patient's back and chest for about half an hour, in, apparently, a sort of mesmeric

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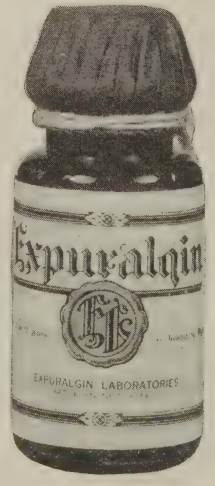

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séance. Then he sucked at the affected area and claimed to be extracting the poison. He then went a few yards away and blew and spat this out, and flung it from his finger tips. By a clever slight of hand he pretended to draw of his patient's neck three black thorns, which, he said, had caused the pain. "I must admit," says the writer, "that after his treatment my neuralgia completely disappeared. Some of these medicine men really have remarkable powers. They are certainly acquainted with many strange herbs and drugs and poisons of the jungle, and seem to know a great deal more than do most Europeans about massage. It is highly probable that they are also possessed of hypnotic powers."

Occupation and Health.—Under this title the International Labor Office of the League of Nations is publishing a series of brochures dealing with hygiene, pathology, and social welfare studied from the point of view of labor, industry and trades, in order to bring together all the information available in various countries concerning industrial processes which may be considered unhealthy. The latest publications deal with anthrax, and the occupations which present the danger of infection thereby, the symptoms, diagnosis, prophylaxis, treatment, and legislative enactments relating to it throughout the world. In similar manner various chemical substances are dealt with, and their manufacture, industrial uses, and effect upon the workers are described. In the majority of cases of anthrax its origin is occupational; but whereas agricultural anthrax, which is by far the commonest form, is due to direct infection from the bacillus and but rarely from the spore, it is pointed out that industrial anthrax is indirectly caused by the spore, rarely by the bacillus.

The diffusion of actinomyces and streptothrix in nature is very wide, these parasites being met with in all kinds of vegetation, in the earth, air, water, dust and in certain foodstuffs such as butter and cheese. Natural infection of man is rather rare if regard is had to the wide distribution of these molds. It does not occur except under certain favorable conditions, such as lesions of the skin or mucous membranes of the intestines, mouth or nostrils; only in the presence of bacteria, inflammatory processes and other special circumstances can it develop pathogenic properties, dental caries providing a specially suitable environment. Its transmission to man from cattle has not yet been decisively proved. Seventy-five per cent. of cases have been said to be occupational in origin; at least fifty per cent. occur in agricultural laborers. The danger of infection is highest during threshing and harvest operations, vegetable dust being the usual and most dangerous vehicle. Actinomycosis is compulsorily notifiable in New Zealand and Dominica only, and it does not occur by name in any list of occupational diseases for which compensation should be paid. The Industrial Committee of California, however, has awarded compensation, as an accident, in one case affecting a workman engaged in putting corn into sacks, and might be awarded in other countries where "infection due to dust" is recognized as cause for compensation.—*Medical Press,* October 6, 1926.

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Maternal Mortality and Morbidity.—A national program for the prevention of maternal mortality and morbidity throughout the United States is outlined by the Children's Bureau of the United States Department of Labor in a report on maternal mortality recently made public.

This report, the work of Dr. Robert Morse Woodbury, formerly director of statistical research for the Children's Bureau, brings together and analyzes all available material, both American and foreign, on deaths of mothers during childbirth.

Maternal mortality rates in the United States are today among the highest in the civilized world, and but a slight decrease in these rates has occurred since the beginning of the present century, Dr. Woodbury's report states. The significance of these facts from a national point of view is found not only in the loss which this means of the lives of women presumably at their prime, but also in the farreaching effect of maternal mortality on the infant death rate.

Dr. Woodbury estimates the total number of maternal deaths in the United States on the basis of 1921 birth registration area statistics to be 18,281. However, a careful survey of sources of error in certifications of death throughout the area leads him to the conclusion that the true number of maternal deaths is probably as much as 12 per cent. in excess of those reported, making an estimated yearly death toll of more than 20,000 women. The maternal mortality rate in 1921 was 6.8 per 1000 live births. The provisional 1924 rate was 6.6.

Figures showing the trend of maternal mortality over a twenty-two year period in the United States, if accepted at their face value, would show an increase in the maternal death rate from 13.3 per 100,000 population in 1900 to 16.9 in 1921, according to the report. However, analysis of various factors affecting these statistics, particularly the campaign for better certification of the causes of death during recent years, would indicate in reality a "very slightly downward trend" since 1900.

Comparison of the United States rates with those of other countries shows that the United States ranks among those having the highest rates, such as New Zealand and Chile. Among the countries having rates less than half that of the United States are Denmark, Finland, Italy, Japan, the Netherlands, Norway, Sweden, and Uruguay.

Analysis of the causes of maternal deaths in this country shows that the most important single cause is puerperal septicemia, due to infection resulting from lack of surgical cleanliness and almost one hundred per cent. preventable through careful asepsis. Two fifths of the maternal deaths in the death registration area of 1921 were due to septicemia. Among other causes, puerperal albuminuria and convulsions were most important, contributing over one fourth of the deaths. This cause is preventable through competent medical care during the prenatal and confinement period. Other causes of death included accidents of pregnancy, hemorrhage, accidents of labor.

Other puerperal causes of death may be prevented in a large proportion of cases by proper prenatal and natal care of the mother. Studies in this country, including the demonstration in New York City of the Maternity Centre Association and the Henry Street Settlement, as well as evidence of physicians and public health authorities here and abroad, have shown the value of competent medical supervision in the reduction of rates from these causes.

The preventive program suggested by the report, in its main outline, is as follows:

1. Regulation of the practice of obstetrics, by requiring a license to practise from both physicians and midwives, by establishing minimum requirements for obtaining such a license, and by defining and prescribing penalties for malpractice.
2. Regulation of public and private hospitals and maternity homes through legal provisions governing the establishment of such institutions and requiring that they be licensed and subject to inspection.
3. Legislation for the control of venereal diseases including the making of these diseases reportable.
4. Requiring that puerperal septicemia be made reportable, as is now the case in a number of states.
5. Provision through Governmental or public sources of better facilities for training medical and nursing personnel and more adequate clinics, hospitals, and maternity homes.
6. Subsidies in aid of State or local activities by Federal or State governments, as in the United States during the past four years through the Maternity and Infancy Act.
7. Educational work directed toward informing mothers of the need of adequate maternity care.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

THE SURGICAL CLINICS OF NORTH AMERICA. April, 1926. Vol. VI, No. 2. San Francisco Number. Philadelphia and London: W. B. Saunders Company, 1926. Pp. 577.

A GUIDE FOR DIABETICS. By Walter R. Campbell, M.A., M. D. and Mame T. Porter, B. Sc. Baltimore: The Williams and Wilkins Company, 1926. Pp. 259.

WHY INFECTIONS? IN TEETH, TONSILS, AND OTHER ORGANS. By Nicholas Kopeloff, Ph.D. New York and London: Alfred A. Knopf, 1926. Pp. 182.

MODERN CLINICAL SYPHILOLOGY. Diagnosis. Treatment. Case Studies. By John H. Stokes, M.D. With the Cooperation of Paul A. O'Leary, M.D., William H. Goeckermann, M.D., Loren W. Shaffer, M.D. and Cleveland J. White, M.D. 865 illustrations and text figures. Philadelphia and London: W. B. Saunders Company, 1926. Pp. 1144.

ELECTROTHERMIC METHODS (Desiccation and Coagulation) in the Treatment of Neoplastic Diseases. Designed as a Practical Handbook of Surgical Electrotherapy for the Use of Practitioners and Students. By J. Douglas Morgan, B.A., M.D. 36 line and a half tone engravings. Philadelphia: F. A. Davis Company, 1926. Pp. 172.

MATERIA MEDICA AND THERAPEUTICS INCLUDING PHARMACY AND PHARMACOLOGY. By Reynold Webb Wilcox, M.A., M.D., LL.D., D.C.L. Philadelphia: P. Blakiston's Son & Company, 1926. Pp. 798.

SURFACE EQUILIBRIA OF BIOLOGICAL AND ORGANIC COLLOIDS. By P. Lecomte du Noüy, D.Sc. Introductions by Dr. Alexis Carrel and Prof. Robert A. Millikan. American Chemical Society Monograph Series. New York: The Chemical Catalog Company, Inc., 1926. Pp. 212.

Intractable Coughs—

and lingering respiratory ills—so often owe their persistence to malnutrition, that vigorous tonic medication invariably forms one of the most essential details in their treatment. The prompt improvement that uniformly results from the use of

Gray's Glycerine Tonic Comp.

(Formula Dr. John P. Gray)

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in acute and chronic affections of the air passages, shows the soundness of the therapeutic principle—"treat the patient as well as the disease." The effect of Gray's Glycerine Tonic Comp. on the nutrition is soon apparent; the patient **eats better, sleeps better,** and **feels better**—and as his condition improves, his cough and other symptoms disappear. Best of all, they do not return, for his recovery is only the logical sequence of increased vitality and resistance.

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Dr. E. Duloroy, *Physician Accoucher to the International Hospital, Paris, France:* "A young accouchée, in a very weak condition and suffering from stomach trouble, could retain no food, but was able to assimilate VALENTINE'S MEAT-JUICE given at first in small doses. An improvement was quickly visible, the patient recovered her strength and is to-day in good health."

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DIRECTIONS. Dissolve one teaspoonful of the Preparation in three tablespoonfuls of cold or warm water. Boiling water changes the character of the preparation

Miscellany.

Dr. Abernethy and "My Book."—Saint Bartholomew's Hospital occupies a chief place in the annals of the medical charities of London. It is one of the five Royal Hospitals. It was originally founded in the twelfth century by Rahere, and a second foundation on letters patent took place in 1544. From that time to the present there has been connected with it a succession of men whose names are familiar to us as household words. At the commencement of this second period of its history there was Thomas Vicary, whose *Englishman's Treasure,* a work on human anatomy, was extensively circulated. Among the others were William Harvey, John Woodall, Percivall Pott, John Freake, and John Abernethy. The most important fact associated with Abernethy was the inauguration by him of the third period in the history of this famous foundation. We are told that he may "justly be looked upon as one of the great reformers and teachers of the medical profession." He was trained at St. Bartholomew's, and was a pupil of Charles Blicke and John Hunter. He became an assistant surgeon, and as such he gave lectures in his own house in Bartholomew Close. These lectures were so successful that the governors were induced to build a regular lecture theatre to accommodate Abernethy's students. In this way Abernethy became the founder of the now world famed medical school of St. Bartholomew's.

Abernethy can have had no qualms about getting himself talked about or of extending the circulation of his book. *My Book,* as he called it, was his *Surgical Observations on the Constitutional Origin and Treatment of Local Diseases,* which became very popular. There are many anecdotes told of his eccentricities of speech and behavior; many of these are undoubtedly apocryphal; but one of the best, which bears evidence of being tinctured with Abernethy's genius, is told by Theodore Hook about this book.

"The door was thrown open," writes Hook about the visit to Abernethy, "with a jerk so sudden that I involuntarily jumped off my chair and salaamed to the little man. . . . When he had, as I fancied, looked clean through me with his piercing grey eyes he sat down, and I thought it high time to follow his example. . . . he opened in a short, sharp bark, half growl, 'Well! what the d—— do you want?' 'Physic.' 'What's the matter with you?' 'Can't tell; read too much, I think.' 'Where do you come from?' 'Oxford.' 'Ah! drink too much, you mean. Never knew an Oxford or Cambridge man die from over-application to anything but his stomach. What the d—— did you come to me for?' 'To be cured.' . . . 'There, hold your tongue; put it out and let me see it. That will do—put it in again—shut your mouth, and keep it shut.' He wrote on a bit of paper about the size of a crown piece a prescription for my disorder, and told me to go to Paternoster Row and buy his book of Longman & Co.; to turn to page 72, and follow his printed rules as closely as I could; but if possible to go down to the seaside for a time, and enter into every scene of gaiety and amusement."

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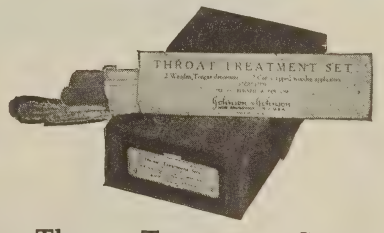

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A Directory of Tuberculosis Institutions.—An up to the minute directory and book of information about tuberculosis institutions serving New York City and the procedure necessary to obtain admissions to them has just been published by the Tuberculosis Sanatorium Conference of Metropolitan New York.

It is the first booklet of its kind published since 1915 when the Department of Health issued a similar one. It is designed especially to be helpful to physicians, nurses, clinic workers and others interested in tuberculosis work in New York City. Copies are available free, upon request, to all physicians in the greater city of New York. Agencies and all others who are interested may secure them at cost price—thirty cents a copy.

Frederic D. Bell, secretary of Hospital Service, New York Tuberculosis and Health Association, is chairman of the committee which compiled the booklet. Other members are Dr. Fernand D'Orbessan, resident physican St. Anthony's Hospital; Jacob Goodfriend, assistant superintendent Montefiore Hospital; Dr. Gez Kremer, medical superintendent, Sea View Hospital; and Sterling Potter, superintendent Hospital Admission Bureau.

Those in Manhattan and the Bronx who desire copies may secure them from the New York Tuberculosis and Health Association, 244 Madison Avenue, New York City; in Brooklyn from the Brooklyn Tuberculosis and Health Association, 67 Schermerhorn Street, and in Queens from the Queensboro Tuberculosis and Health Association, 163-18 Jamaica Avenue, Jamaica.

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ÉTUDES SUR LES AFFECTIONS DE LA COLONNE VERTÉBRAIE. By André Léri. Paris: Masson et Cie, 1926. Pp. 526.

OBESITY. By Leonard Williams, M.D. London and New York: Oxford University Press, 1926. Pp. 171.

THE CARRIER PROBLEM. By K. C. Paul, M.B.B.S. with foreword by David Nabarro, M.D., F.R.C.P. London and New York: Oxford University Press, 1926. Pp. 102.

PROBLEMS OF HUMAN REPRODUCTION. By Paul Popenoe. Baltimore: The Williams and Wilkins Company, 1926. Pp. 218.

LIGHT TREATMENT IN SURGERY. By Dr. O. Bernhard. Translated by R. King Brown, B.A., M.D., D.P.H. London: Edward Arnold & Company, 1926. Pp. 317.

PLASTIC SURGERY OF THE HEAD, FACE AND NECK. By H. Lyons Hunt, M.D., L.R.C.S. 342 engravings and 10 colored plates. Philadelphia and New York: Lea & Febiger, 1926. Pp. 404.

PRINCIPLES OF DIAGNOSIS AND TREATMENT IN HEART AFFECTIONS. By Sir James Mackenzie, M.D., F.R.S., F.R.C.P., LL.D. and James Orr, M.B., Ch.B. Third edition. London and New York: Oxford University Press, 1926. Pp. 242.

THE PATHOLOGY AND TREATMENT OF DIABETES MELLITUS. By George Graham, M.A., M.D., F.R.C.P. Second edition. London and New York: Oxford University Press, 1926. Pp. 230.

HISTOLOGICAL TECHNIQUE. For Normal Tissues, Morbid Changes and the Identification of Parasites. By H. M. Carleton, M.A., B.Sc., D.Phil., in collaboration with Frederic Haynes, B.A. London and New York: Oxford University Press, 1926. Pp. 398.

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Dr. E. Duloroy, *Physician Accoucher to the International Hospital, Paris, France:* "A young accouchée, in a very weak condition and suffering from stomach trouble, could retain no food, but was able to assimilate VALENTINE'S MEAT-JUICE given at first in small doses. An improvement was quickly visible, the patient recovered her strength and is today in good health."

Dr. Javier Ortis y Ferrer, *Physician to the Municipal Charity of Madrid, Spain:* "VALENTINE'S MEAT-JUICE has given the happiest results in cases of debility in the asthenia produced by operations of confinements. In some cases of Tuberculosis it restored exhausted strength, and in every case where organic exhaustion manifested itself as an effect of disease."

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Miscellany.

When the Medical Profession of New York Paid Homage to "the Autocrat of the Breakfast Table."—Early in 1883, at a dinner party of physicians at the University Club, New York, one of the number alluded to the fact that Professor Oliver Wendell Holmes had just given up his chair in the Medical Department of Harvard University. The question came up as to whether, at this time, it would not be a graceful and appropriate expression of the sentiment of the medical profession of the city of New York to invite Dr. Holmes to a public dinner, so that all classes of the profession, regardless of school or affiliation, could join to make such a demonstration a happy as well as a useful one.

The suggestion was received by all present with great enthusiasm, and an organization was immediately effected as a nucleus for the formation of a general committee of arrangement. Dr. T. Gaillard Thomas was elected chairman; the committee members were Fordyce Barker, William T. Bull, Clement Cleveland, John G. Curtis, John C. Dalton, Francis Delafield, William H. Draper, Frank P. Foster, Allan McLane Hamilton, Edward L. Keyes, Francis P. Kinnicut, Alfred L. Loomis, Charles McBurney, Henry G. Piffard, William M. Polk, Beverley Robinson, David St. John Roosa, both Smiths, Lewis A. Stimson, and Robert F. Weir. Among invited guests were James Anderson, Alonzo Clark, Alfred C. Post, William H. Van Buren. Guests from other cities included Henry J. Bigelow, John S. Billings, Samuel D. Gross, A. Weir Mitchell, William Pepper, John V. Shoemaker. Bishop T. M. Clark represented the clergy, the Hon. William M. Evarts the bar, George William Curtis literature, and Whitelaw Reid the press. Charles A. Dana of the *Sun* and Horace White of the *Post* also were invited. Besides these there were many others, both subscribers and guests, whose names are now famous.

The dinner was given on April 12th at Delmonico's, then at the corner of Fifth Avenue and Fourteenth Street. The menu was printed in book form bound heavily in plush of various colors. The covers were ornamented with a gilt design consisting of scalpel and pen crossing each other, and encircled by a laurel wreath. Stubbs' orchestra played popular airs in the gallery. Mr. Delmonico himself took personal charge of all the details of the dinner, and spared no effort or expense. Dr. Fordyce Barker, president of the Academy of Medicine, then at 18 West Thirty-first Street, was master of ceremonies. While coffee was being poured, special messengers hurried through the room distributing to each guest what purported to be a telegram from Boston dated April 1, 1883, with a pen and ink caricature on one side, and a poem of acceptance on the other, both done by the hand of Holmes himself. "Then came the intellectual part of the feast. For thirty-two successive years, the versatile Professor had written annual poems for his class of 1829, so that he found it not at all difficult to respond to the assembled doctors with a fitting poem of over two thousand words. Although hastily composed, it was in perfect rhyme and meter, fitting the occasion, full of apt puns and humorous thrusts." At the close of the toasts, William T. Bull, at that time not yet afflicted with cancer of the throat, which was later to cause his death, led the singing of Auld Lang Syne with his beautiful baritone voice. The souvenirs of the occasion were sherbet cups, in the form of miniature skulls.

The tribute to Holmes in the toast of George William Curtis elicited much applause when he said: "But mark his own impartiality: while he professes medicine, he practises literature; while he cools the fever that wastes the body, he kindles the fires that ennoble the soul; and, soothing mortal pain with cunning anodyne, he distills an immortal joy from the divine nepenthe of song."—*Abstracted from Notes and Abstracts.*

"Father Craft" and Child Welfare.—It is not recognized generally that although in the rearing of a child most depends upon the mother that the father has some say and influence in the matter. Occasionally he objects to certain phases of the child welfare movement as, for instance, to the visits of health visitors. The working man is jealous of his rights and resents frequently the intrusion of health visitors albeit they come with the best intentions.

At the English Speaking Conference on Maternity and Health Welfare held recently in London, Dr. James Fenton read a paper on the above subject. He pointed out that they had been concentrating on education of mothers in mothercraft. They were apt to forget the father who was a factor they could not ignore. He was still the head of the house in most working class homes and often prejudiced the mother against accepting the rational advice she received from trained maternity and child welfare centres. Again, many fathers were likely to regard health visitors as busybodies. Moreover, they were inclined to regard the infant welfare centre as a kind of club for mothers, and while they saw no objection to visiting their own clubs, they thought the mother's place was in the home, especially if she had young children. Dr. Fenton recommended a plan to overcome this difficulty, put into practice by himself, that of inviting the objecting husbands in small groups to meet him at the infant welfare centres in the evenings. It was found that many of the fathers became interested, and nearly all withdrew their opposition when once the facts were clearly stated. Subsequently he offered to address the fathers on subjects chosen by themselves. Those which seemed most popular were cancer and vaccination. After a little encouragement the men not only asked questions, but entered freely into the discussions which followed. Dr. Fenton went on to describe how a small group of men in his district had decided to form a Fathers' Council, the first body of this kind to be established in Great Britain. This council had its own publicity man who wrote articles for the local press. The articles which appeared proved a wonderful stimulus to the fathers who were flattered by a little publicity.

In preaching the gospel of personal and domestic hygiene, the public must be educated in their methods and the best modes of carrying them out. In order to do this successfully both mothers and fathers must be interested. Fathers' Councils, therefore, are important steps in the war against disease.

"Several Firemen Prostrated by Smoke"
"Asphyxiation of Whole Family Barely Averted"
"Found Unconscious in Closed Garage"
"Overcome by Gas"

Such headings as these appear in the news every day at this season of the year. Are you prepared with

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to give immediate relief to these victims or would you have to 'phone for and await the arrival of resuscitation apparatus?

The intramuscular injection of Alpha-Lobelin will, in many instances, bring results before unwieldy equipment can be transported to the scene of the accident. A sufficient number of ampules for the resuscitation of the victims of a catastrophe can conveniently be carried in your emergency bag.

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Literature on Request

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Sheik Abou Ali el-Hosein Abd Allah Ibn Sina.—Above appears the full name of the Arabian physician known to western civilization as Avicenna. He was born in 980 A.D. near Bokhara, where he became known as a youthful prodigy, having before the age of ten committed to memory the Koran and most of the Arabic poetry extant. In a brief autobiography reproduced by Post Sargent in the *Adventure* he tells of his wanderings through Arabia and Persia. In Teheran he settled down for a while and "wrote some thirty treatises, my wisdom being by then ripened." Journeying to Hamadan, where Shems Addaula was Emir, by him he was made court physician and Vizier and loaded with riches. But the Emir being defeated in an attempt to subjugate a neighboring ruler the populace turned against Avicenna, on the ground that he had advised against the expedition and had used his magic to cause its defeat. Robbed of his fortune and barely escaping with his life, he eventually made his way to Thabaristan, where he was received with honors by the ruler of Ispahan, Ala ed-Daoulah. Here he abode for many years with peace and honor. "Many disciples came to Ispahan to hear my words and learn the true science of human flesh and blood, as expounded by Galen and Hippocrates and Ibn Sina [Avicenna]. From Bokhara, and Teheran and Tabriz; from Stamboul and the cities of the Grand Mogul; from the far towns of infidel lands they come. And depart not with unfilled minds."

The fame of Avicenna spread throughout the western world and his teachings were followed until the modern era of medicine set in. At least one of his *obiter dicta* has come to naught, for he said: "The air and the clouds are to the winged creatures, and of these will man never never be, for who will give him wings to fly?"

Belgium, the Classical Land for Ophthalmology.—At the recent Ophthalmological Congress held at Brussels, Professor Lapersonne delivered an address entitled Belgium, the Classical Land for Ophthalmology, giving significant examples in support of his theory. "To cite only a few," he said, "since the beginning of the eighteenth century, in this renaissance of ophthalmology, which has realized in our profession the greatest advances since the school of Alexandria, we have Brisseau, stating before the Academy of Science of Paris that 'cataract is formed by the opacification of the crystalline lens.' And we all remember the touching ceremony at which, at the summons of our regretted colleague, Van Duyse, we united to glorify the memory of the precursor of Daviel.

In the nineteenth century there began in Belgium the great struggle against granular ophthalmia, brought from Egypt by the armies of Bonaparte, which was nothing else than trachoma, made more acute and more destructive by what we call today infectious associations. With this struggle we associate the glorious names of Kluyskens, Vleminck, Van Mons, Fallot, and later Hairion. The last pursued to a high degree the study of the pathological anatomy of trachoma, affirmed its contagious nature, and proposed the best prophylactic measures to combat this dangerous malady."—*Translated from Aesculape.*

"Keep the Child in School"

Ordinarily the child contracting Whooping Cough at this season of the year will be in ill health until Spring. All Winter he will be sensitive to changes of weather and susceptible to whatever infections may be prevalent. Interference with nutrition is certain and growth is thus retarded. If the child is of school age, enforced absence may be so protracted as to necessitate a review of the work of the entire year. Respiratory complications may prove serious or even fatal.

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In recommending an infant food —consider its nutritive value first

Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

FOR the infant, breast milk furnishes all of the requirements mentioned. There is no need to seek further for a better food because no one has as yet been able to prepare a formula which can be considered anything other than a second choice.

As a breast milk substitute there is no better food for the infant than Eagle Brand Milk. For more than four years the largest child-feeding clinic in the history of the world has been maintained in the Near East, and Eagle Brand Milk has met every requirement for a complete milk food for the infants and older children throughout this period.

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Laboratories in TORONTO, PARIS, MADRID *and* MEXICO CITY

Medical Service with the French Army.—Colonel Bailey, K. Ashford, M.C., publishes in the November issue of the *Military Surgeon* an interesting paper based on his experience when serving with the French Army. In the course of the paper the organization of the French Medical Service is given in considerable detail. The important rôle assigned to the pharmacist in the medical service of the French Army is in notable contrast to conditions in the United States Army.

First Aid for Poison Gas Patients.—The Medical Research Division of the Medical Corps at Edgewood Arsenal, Maryland, offers a series of suggestions as a guide for first aid treatment. Quick action is essential, delay may prove fatal. In all cases the patient must have fresh air, rest, warmth, careful attention and neutralization of the chemical. The patient should, 1, be removed from the gas infected area; 2, all gas infected clothing removed; 3, washed with water to remove gas or chemical; 4, sent to aid station by ambulance; 5, kept silent in reclining position; 6, any areas burned by phosphorus must be kept under water. *This is very important.* The poison gases may be roughly divided into tear gases, the chlorine group and the mustard group, though this division is not clearly defined. In most of the tear gases the effects are largely confined to lachrymation and are not prolonged. The cyanide tear gases are, however, very toxic. These should be treated by washing with sodium bicarbonate solution and boric acid solution, followed by hypochlorate solution twenty per cent.

The chlorine group of poison gases includes several containing arsenical compounds. They affect the lungs particularly and, therefore, are toxic as well as locally irritating. For these wash exposed surfaces with sodium bicarbonate and sodium hypochlorate solution. Give with a cream, spray throat with alcohol, and give light stimulant or coffee from time to time and give oxygen. The mustard gas group should be washed with organic solvent such as benzene, chloroform or either, followed by soap and water or hypochlorate and bicarbonate solution. Carbon monoxide cases should be treated with oxygen inhalations. Further details appear in the *Military Surgeon* for November.

Blood Tests for Paternity.—Recent work on the blood groups has increased the interest in the medicolegal applications in cases of disputed parentage. Ottenberg's tables, which have been the standard in such cases, are based on the assumption that the blood groups are inherited as two independent pairs of mendelian unit factors. Recently, however, it has been shown that the blood groups are inherited as a series of three multiple allelomorphs. This hypothesis was suggested independently by Bernstein in Germany and Furuhata in Japan. It was immediately confirmed by Snyder in the United States, and has been accepted by most of the blood workers of the world. This hypothesis does not invalidate any of the previous tests, but makes the application even more close. These tests for paternity can be made by any one capable of performing an accurate agglutination test, regardless of his personal knowledge of the principles of heredity. —*Jour. A. M. A.,* November 27, 1926.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

MEMORIAS DO INSTITUTO OSWALDO CRUZ. 1926, XIX, No. 1. Rio de Janeiro-Manguinhos. Pp. 137.

LES PANCRÉATITES AIGUËS CHIRURGICALES. Par Pierre Broez. Paris: Massón et Cie, 1926. Pp. 188.

THE HEART. By Alexander George Gibson, D.M., F.R.C.P. London and New York: Oxford University Press, 1926. Pp. 108.

OBSTETRICS. By John S. Fairbairn, M.A., B.M., B.Ch., F.R.C.P., F.R.C.S. London and New York: Oxford University Press, 1926. Pp. 221.

THE SURGICAL CLINICS OF NORTH AMERICA. August, 1926. Volume VI., No. 4, Chicago Number. Philadelphia and London: W. B. Saunders Company, 1926. Pp. 1119.

LA TUBERCULOSE PULMONAIRE LATENTE. PRETUBERCULOSE, SOMMETS SUSPECTS. Paris: Gaston Doin et Cie, 1926. Pp. 247.

LES FONDEMENTS, LES LIMITES ET LA VALEUR DE LA PSYCHOLOGIE SCIENTIFIQUE. By M. le Prof. Dr. Alberto Mochi. Le Caire: Imprimerie de l'Institut Francais, 1926. Pp. 343.

HUNTER TOD'S DISEASES OF THE EAR. Revised and largely rewritten by George C. Cathcart, M.A., M.D., Second edition. London and New York: Oxford University Press, 1926. Pp. 333.

LES SYNDROMES D'AORTITE POSTÉRIEURE (Aortite Thoracique Aortite Abdominale). By Ch. Laubry, A. Maugeot and J. Walser. 19 figures, 7 plates, three in colors. Paris: Gaston Doin, 1925. Pp. 234.

THROMBO-PHLÉBITE INFECTIEUSE DU SINUS CAVERNEUX ET LÉSIONS ASSOCIAÉES SEPTIQUES ET TRAUMATIQUES DES SINUS VEI NEUX DE LA BASE. By Wells P. Eagleton. Paris: Masson et Cie, 1926. Pp. 158.

THE COMPARATIVE ANATOMY, HISTOLOGY, AND DEVELOPMENT OF THE PITUITARY BODY. By G. R. De Beer, M.A., B.Sc., F.L.S. Biological Monographs and Manuals, No. VI. Eleven plates and 118 drawings. Edinburgh and London: Oliver and Boyd, 1926. Pp. 108.

BIOLOGISCHE LICHTWIRKUNGEN BEIM GESUNDEN UND KRANKEN MENSCHEN UNTER BESONDERER BERÜCKSICHTIGUNG DER RACHITIS. EINE ÜBERSICHTSARBEIT. By Priv. Doz. Dr. Fr. Peemöller. Reprinted from Strahlentherapie. Band XX. 1925. Pp. 60.

THE ABDOMEN IN LABOUR. Being a General Practitioner's Clinical Study of the Parturient Abdomen. By Norman Porritt, M.R.C.S., L.R.C.P. The Essay to which was awarded the Sir Charles Hastings Prize of the British Medical Association, 1926. London and New York: Oxford University Press, 1926. Pp. 76.

A DESCRIPTIVE ATLAS OF VISCERAL RADIOGRAMS. By A. P. Bertwistle, M.B., Ch.B., F. R. C. S. Ed. and E. W. H. Shenton, M.R.C.S., L.R.C.P. With an introduction to the American Edition by M. G. Seelig, M.D., F.A.C.L. 330 illustrations. St. Louis: The C. V. Mosby Company, 1926. Pp. 250 .

L'ARTHROPLASTIE DU GENOU. By Charles Henri Chevallier. Paris: Masson et Cie, 1926. Pp. 152.

A LA MÉMOIRE DES MEMBRES TITOLAIRES DE L'ACADÉMIE ROYALE DE MÉDCINE. By Mm. Désiré Van Bastelaer, Richard Buddaert, Alphonse Degive, Lambert Stubbe, Charles Blas, Théophile Debaisieux, Alphonse Moeller. Bruxelles: Establissements d'Imprimerie l'Avenir, 1926. Pp. 69.

PRACTICAL PHYSIOLOGICAL CHEMISTRY. A BOOK DESIGNED FOR USE IN COURSES IN PRACTICAL PHYSIOLOGICAL CHEMISTRY IN SCHOOLS OF MEDICINE AND OF SCIENCE. By Philip B. Hawk, M.S., Ph.D., and Olaf Bergeim, M.S., Ph.D. Ninth edition, revised and enlarged. Two full-page plates of Absorption Spectra in Colors. Six additional full-page color plates and two hundred and seventy-three figures of which twelve are in colors. Philadelphia: P. Blakiston's Son & Company, 1926. Pp. 931.

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Vol. 12

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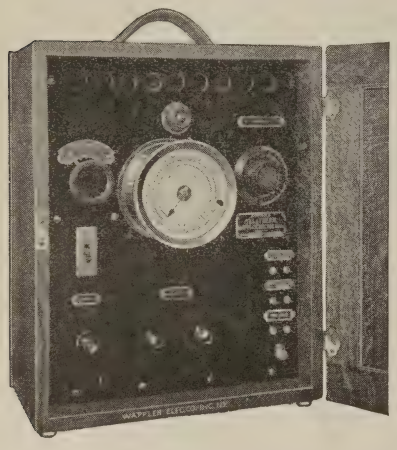

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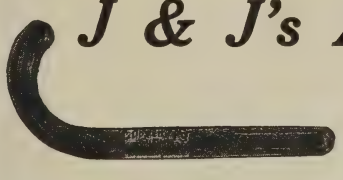

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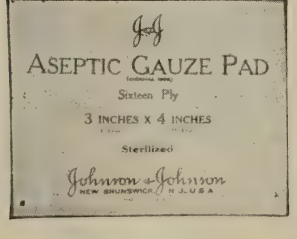

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Principles of Diagnosis and Treatment in Heart Affections. *Sir James Mackenzie, M.D., and James Orr, M.B., Ch.B. Third edition* 801

The Scientific Basis of Chemotherapy. *Iwan Ostromislensky, Ph.D., M.D.* 801

The Heart. *Alexander George Gibson, M.D., F.R.C.P.* 801

La Tuberculose Pulmonaire Latente—Pretuberculose Sommets Suspects. *J. Ricux* 801

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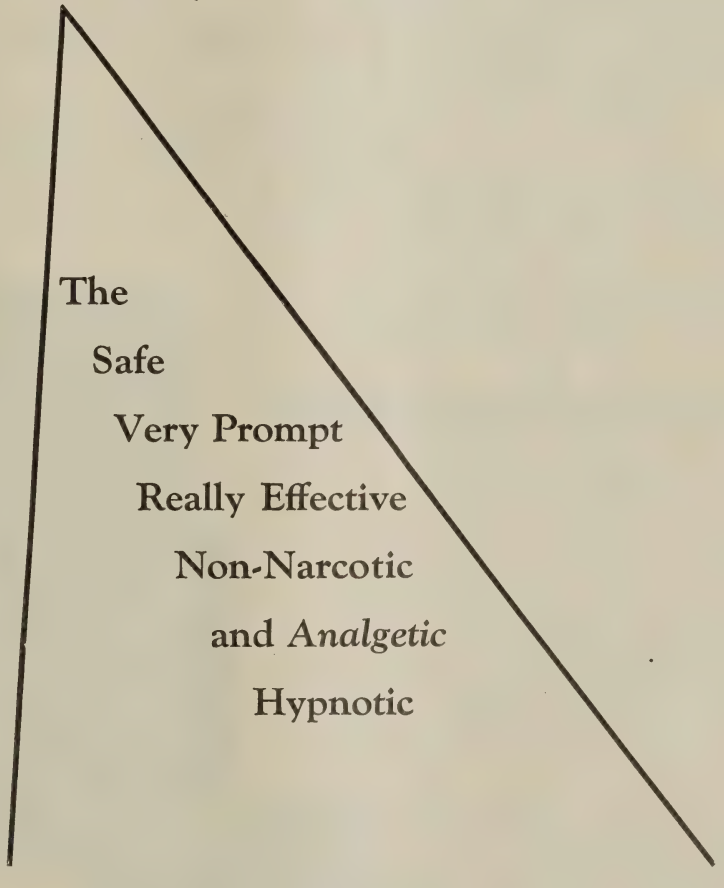

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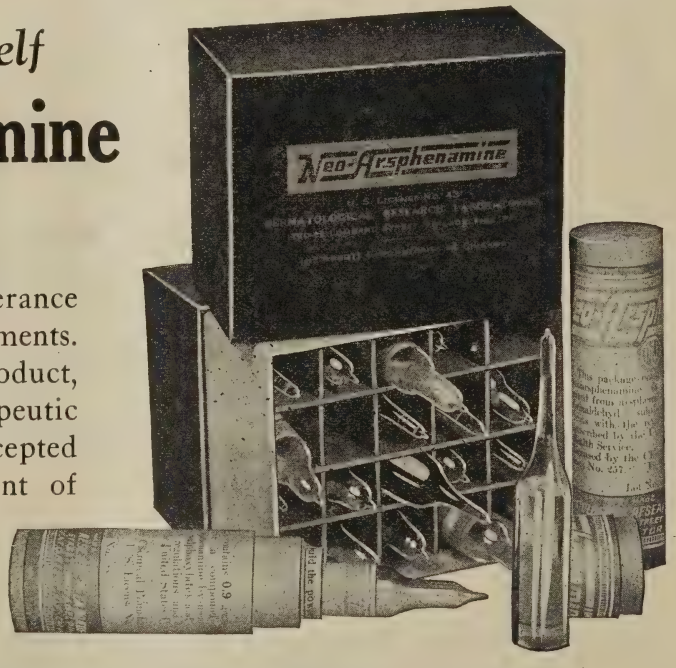

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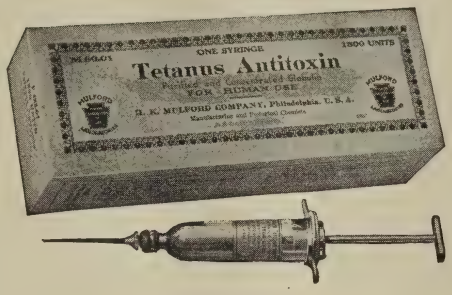

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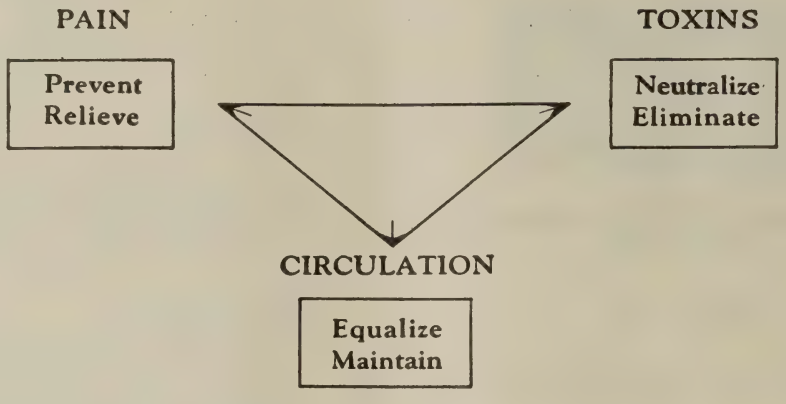

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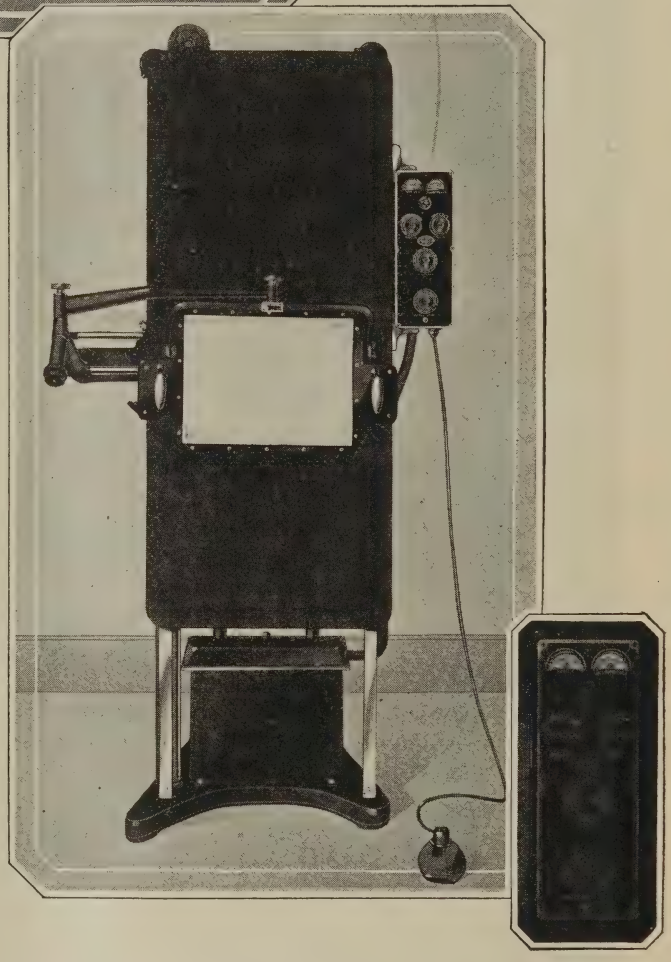

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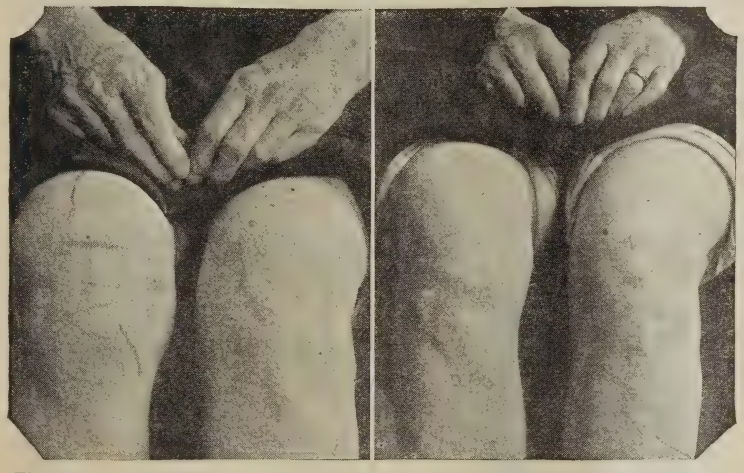

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"Mrs. T., aged 50 years, had suffered 6 years from multiple rheumatoid arthritis, which started in the little finger of the right hand and gradually extended to every joint in the body, excepting the hips. The knees and elbows became bent and two years ago patient had to give up walking, as it was too painful. In 1919 patient had her tonsils and every tooth removed and x-rays taken of every part of the body to learn the source of infection. The doctor said he could find nothing to cause the trouble. She underwent the regular curriculum of treatments without avail. Four months ago the patient began taking befsal dosage of 120 to 180 grains per day, totaling 36 ounces. The medicine at first seemed to act as an astringent, but now the bowels move freely. The middle joints of most of her fingers seem to be ankylosed, but all the other joints of her body move, and she now walks. She is certainly feeling better, with improved general health and greater freedom of action."—Medical World.

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is seldom restored by ordinary laxatives. But the effects of Agarol are not those of ordinary laxatives. To be sure, it will clear out the bowel thoroughly and well, without griping or distress, and often afford prompt relief when other measures have failed.

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AGAROL, the *original* Mineral Oil—Agar-Agar Emulsion, has these special advantages:

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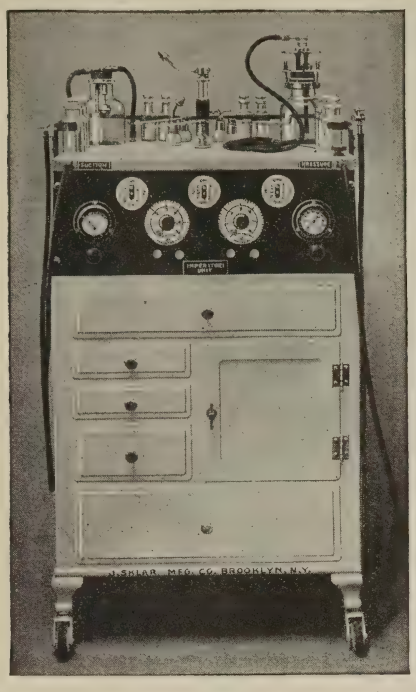

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In an endeavor to improve conditions that may be properly grouped under the above-mentioned terms, the first thought of the attending physician is an immediate gain in weight, and the second thought is to so arrange the diet that this initial gain will be sustained and progressive gain be established. Every few ounces gained means progress not only in the upward swing of the weight curve, but in digestive capacity in thus clearing the way for an increasing intake of food material. As a starting point to carry out this entirely rational idea, the following formula is suggested:

Mellin's Food	**8 level tablespoonfuls**
Skimmed Milk	**9 fluidounces**
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This mixture furnishes over 56 grams of carbohydrates in a form readily assimilated and thus quickly available for creating and sustaining heat and energy. The mixture supplies over 15 grams of proteins for depleted tissues and new growth, together with over 4 grams of inorganic elements which are necessary in all metabolic processes. These food elements are to be increased in quantity and in amount of intake as rapidly as continued improvement is shown and ability to take additional nourishment is indicated. Suggestions for this readjustment are set forth in a clear manner in a pamphlet devoted exclusively to the subject, which will be sent to physicians upon their request.

Continued repetition of highly successful and oftentimes remarkable results from the application of this procedure justifies its universal recognition.

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Each tablespoonful represents

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Proteins (Peptones and Propeptones)	5.25%
Lactose and Dextrose	11.3%
Cane Sugar	2.5%
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It acts as a bronchial sedative and expectorant, exhibiting a peculiar ability to relieve *Bronchitis—acute or chronic.* It checks as well a persistent winter cough and without harsh or untoward effect. It is agreeable to the palate and acceptable to the stomach—with merit as an intestinal antiseptic. Supplied in 12 oz. bottles.

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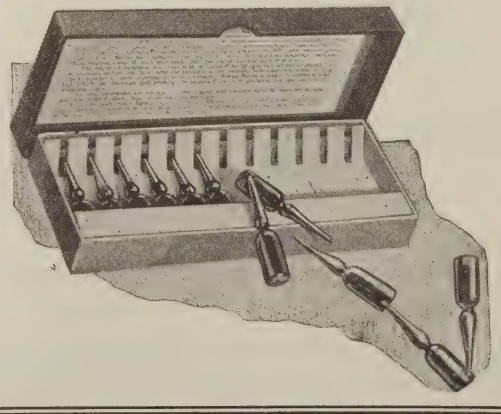
In What Respect Does Gonolin Differ From Other Protein Substances?

TYPICAL CASE REPORTS

Initials of patient: J. M. Age 50. Male. Type of Infection: Chronic. Case History: Infection of three years' standing. Small discharge continued. Muscles and joints affected. Previous Treatments: Various treatments tried without effect. Serological Findings: Positive for Gonococci. Length of GONOLIN Treatment: One month. Began May 15, 1926; finished June 15, 1926. Total Injections: 12. End Results: Discharge stopped. Patient much improved, felt much better. Dated: Aug. 14, 1926. Signed: Dr. C. I. T., Detroit, Mich.

Initials of patient: A. E. Age 28. Male. Type of Infection: Acute. Case History: Acute gonorrheal urethritis. Previous Treatments: None. Length of GONOLIN Treatment: 7 weeks. Began Nov. 26, 1925; finished Jan. 15, 1926. Total Injections: 27. End Results: Negative. Remarks: Very satisfactory. Dated: Aug. 10, 1928. Signed: Dr. E. H. H., N. Y. C.

Other treatments, based on protein therapy, have a tendency to destroy the Neisserian Bacilli, but have no power to biochemically split and eliminate their dead bodies. Furthermore, they have no stimulating influence upon the system, with the consequence that the end products of the destroyed bacilli are not eliminated through the emunctories. The biochemical activity of Gonolin is of paramount importance as it eliminates all possibilities that the gonorrheal infection shall become chronic. This biochemical activity is insured exclusively through the use of Gonolin.



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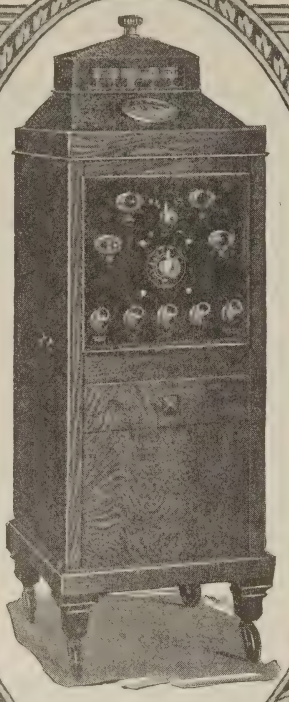

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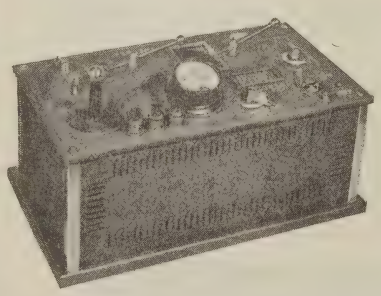

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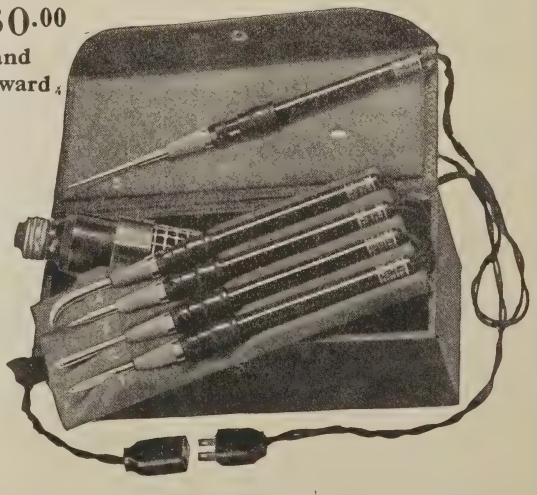

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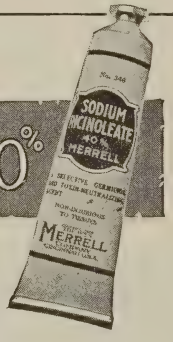

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A large number of cases were studied. The investigators conclude, in part:

"From the results obtained we believe that yeast is of definite value in the treatment of furunculosis and chronic constipation.

" . . . In indigestion it seems to be of value in some cases. In some of the undernourished cases, yeast stimulated the appetite and seemed to facilitate absorption. From these results it appears that there is a definite place for yeast in Therapeutics."

Yeast showed very rapid results in quite a few of the series of cases studied by these scientists. The investigators say:

"Outside of the definite effects on the pathological conditions noted in the tables, yeast seems to produce some systemic effect. Many of the patients reported either a marked improvement in appetite or an increased sense of well-being."

Fleischmann's Yeast acts as a corrective for the too highly concentrated foods of today. In cases of constipation it increases the bulk and moisture of the faecal masses, tending to soften them, and diminishes the tendency toward absorption of putrefactive products. This last factor undoubtedly plays a role in the benefits noted from eating Fleischmann's Yeast for digestive disturbances.

As medical men have known for many years, yeast is remarkably effective for boils and skin disorders. And the combination of its qualities makes it highly beneficial as a general tonic, for so-called "run down condition."

* * *

YEAST may be eaten in a number of ways. The usual dosage is 2 or 3 cakes, one before each meal: in fruit juices, water or milk—spread on crackers—or just plain, nibbled from the cake. Naturally for constipation it is more effective in a glass of hot water (not scalding)—a cake night and morning.

A copy of our latest booklet on Yeast, for physicians, will be sent to you on your request. It contains authoritative scientific matter on the subject.

The Fleischmann Company, Dept. 259, 701 Washington Street, New York, N. Y.

*Note—A complete report of this investigation will be found in the May, 1926, issue of Archives of Therapeutics

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has been successfully used for years in the feeding of infants deprived of their natural food.

It is the carbohydrate of choice because it can be assimilated by the infant in greater amounts than other sugars.

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MEAD'S Infant Diet Materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.

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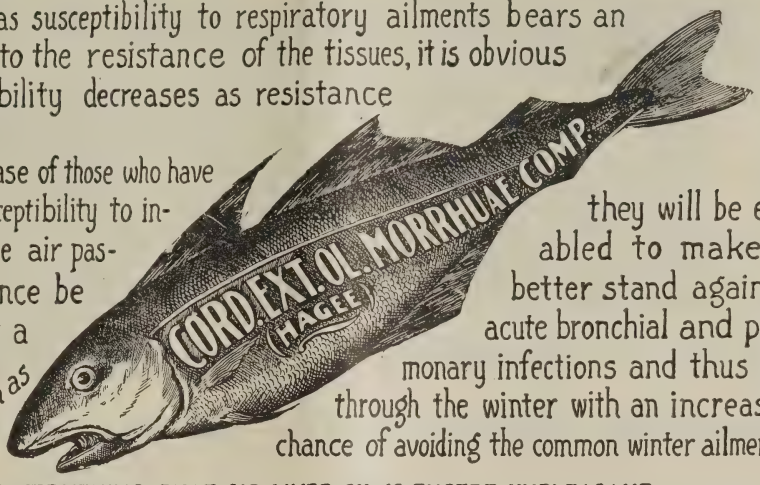
Manufacturers of Infant Diet Materials Exclusively

A BETTER STAND AGAINST RESPIRATORY DISEASES

Inasmuch as susceptibility to respiratory ailments bears an inverse ratio to the resistance of the tissues, it is obvious that susceptibility decreases as resistance increases.

If in the case of those who have an unusual susceptibility to infections of the air passages, resistance be augmented by a cod liver oil preparation such as



they will be enabled to make a better stand against acute bronchial and pulmonary infections and thus go through the winter with an increased chance of avoiding the common winter ailments.

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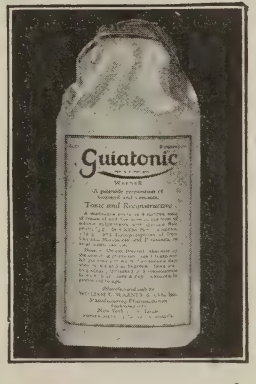
is found mainly in its complications or consequences. "It is easy to tell when a cold starts, but no physician, however skilled, can tell when—or how—it will end!"

But under the prompt use of Guiatonic, the dangers of acute nose and throat infections can be largely removed. This is due chiefly to the aid and support it gives to the natural defensive and recuperative forces of the body.

Guiatonic is a splendid ally in fighting colds.



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Indicated in all depressed or debilitated conditions, or whenever a tonic is required.

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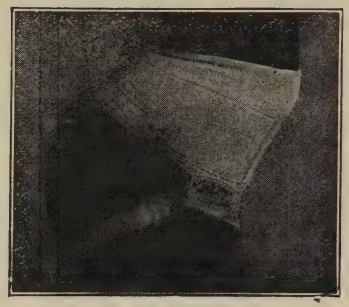

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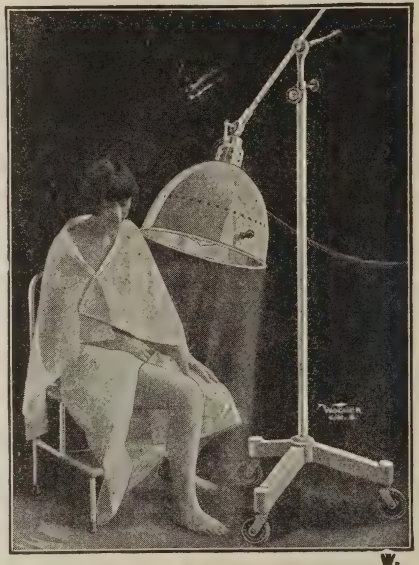

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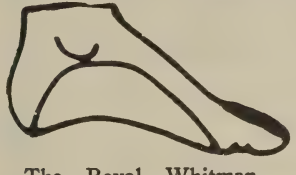

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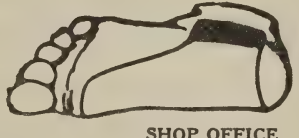

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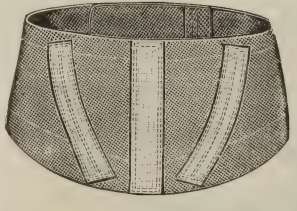

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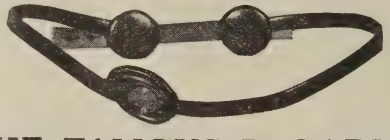

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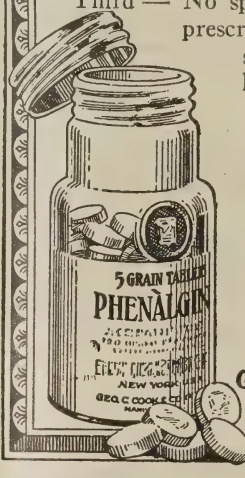

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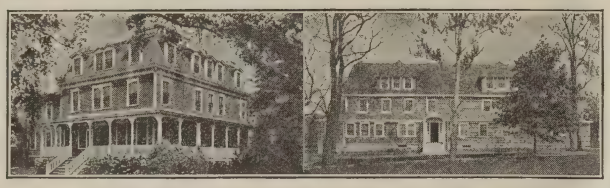

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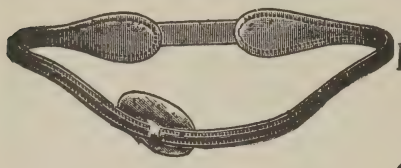

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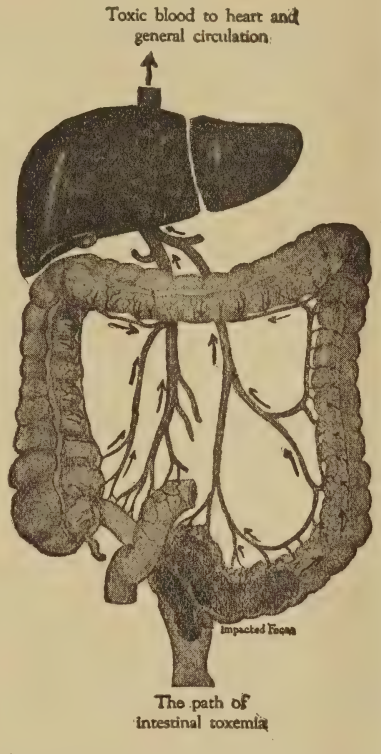

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**Davidsohn, H.—Ueber die Reaktion der Frauenmilch, Zeitsch. for Kinderh., Vol. 9, 1913, page 15.

***Friedenthal, H.—Ueber die Eigenschaften künstlicher Milchersera und ueber die Herstellung eines künstlichen Menschenmilchersatzes. Zentralb. f. Physiol., Vol. 24—1910—page 687.

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